DCR-TRV250

RMT-814

SERVICE MANUAL

LEVEL 1

Ver 1.0 2003. 01

Revision History

US Model
Canadian Model
E Model
Brazilian Model
Tourist Model

NIGHTSHOT
OFF ON
700x
DIGITAL ZOOM
OPTICAL 20x
SONY
Digital Handycam
USB STREAMING
SteadyShot
DCR-TRV250E PAL
Digital 8

M2200 MECHANISM

Link

- SPECIFICATIONS
- SELF DIAGNOSIS FUNCTION
- ORNAMENTAL PARTS

- INSTRUCTION MANUAL is shown at the end of this document.

Digital 8 DIGITAL VIDEO CAMERA RECORDER

SONY®

Self Diagnosis Supported model

Digital Handycam InfoLITHIUM™ M SERIES

SPECIFICATIONS

Video camera recorder

System

Video recording system
2 rotary heads
Helical scanning system

Audio recording system
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)

Video signal
NTSC color, EIA standards

Usable cassette
8 mm video format cassette

Recording/playback time (using 120 min. Hi8/Digital8 video cassette)
SP mode: 1 hour
LP mode: 1 hour and 30 minutes

Fastforward/rewind time (using 120 min. Hi8/Digital8 video cassette)
Approx. 5 min.

Viewfinder
Electric Viewfinder (monochrome)

Image device
3 mm (1/6 type) CCD
(Charge Coupled Device)
Gross: Approx. 460 000 pixels
Effective: Approx. 290 000 pixels

Lens
Combined power zoom lens
Filter diameter 37 mm (1 7/16 in.)
20× (Optical), 700× (Digital)

Focal length
f=2.5 – 50 mm (1/8 - 2 in.)
When converted to a 35 mm still camera
f=42 – 840 mm (1 11/16 - 33 1/8 in.)

Colour temperature
Auto

Minimum illumination
4 lx (lux) (F 1.6)
0 lx (lux) (in the NightShot mode)*
* Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/output connectors

S video jack
Output
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Chrominance signal: 0.286 Vp-p, 75 Ω (ohms), unbalanced

Audio/Video jack
Output
AV MINIJACK,
VIDEO:
1 Vp-p, 75 Ω (ohms), unbalanced, sync negative
AUDIO:
327 mV, (at output impedance more than 47 kΩ (kilohms))
Output impedance with less than 2.2 kΩ (kilohms)
Stereo minijack (ø 3.5 mm)

DV jack
Input/Output
4-pin connector

USB jack
Mini-B

LCD screen

Picture
6.2 cm (2.5 type)
50.3 × 37.4 mm
(2 × 1 1/2 in.)

Total dot number
123 200 (560 × 220)

General

Power requirements
7.2 V (Recahrgeable battery pack)
8.4 V (AC adaptor)

Average power consumption (when using the battery pack)
During camera recording using LCD
3.5 W
Viewfinder
2.7 W

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Recommended charging temperature
10 °C to 30 °C (50 °F to 86 °F)

Storage temperature
–20 °C to +60 °C (–4 °F to +140 °F)

Dimensions (approx.)
89 × 101 × 199 mm
(3 5/8 × 4 × 7 7/8 in.) (w/h/d)

Mass (approx.)
810 g (1 lb 12 oz)
main unit only
950 g (2 lb 1 oz)
including the rechargeable battery pack NP-FM30, Hi8/Digital8 cassette, lens cap and shoulder strap

AC adaptor

Power requirements
100 - 240 V AC, 50/60 Hz

Current consumption
0.35 – 0.18 A

Power consumption
18 W

Output voltage
DC OUT: 8.4 V, 1.5 A in the operating mode

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Storage temperature
–20 °C to +60 °C (–4 °F to +140 °F)

Dimensions (approx.)
56 × 31 × 100 mm
(2 1/4 × 1 1/4 × 4 in.) (w/h/d)
excluding projecting parts

Mass (approx.)
190 g (6.7 oz)
excluding power cord

Recargeable battery pack

Maximum output voltage
DC 8.4 V

Output voltage
DC 7.2 V

Capacity
5.0 Wh (700 mAh)

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Dimensions (approx.)
38.2 × 20.5 × 55.6 mm
(1 9/16 × 13/16 × 2 1/4 in.)
(w/h/d)

Mass (approx.)
65 g (2.3 oz)

Type
Lithium ion

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

COVER

SELF-DIAGNOSIS FUNCTION

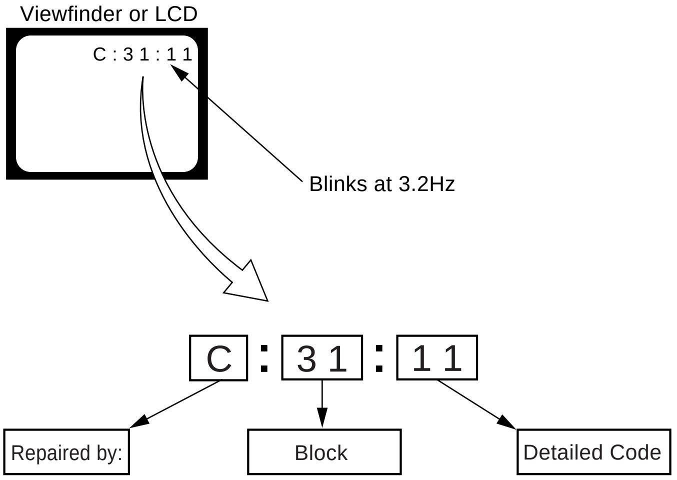
1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD what to do. This function consists of two display; self-diagnosis display and service mode display.

Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or LCD shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.



C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer

Indicates the appropriate step to be taken.
E.g.
31 ....Reload the tape.
32 ....Turn on power again.

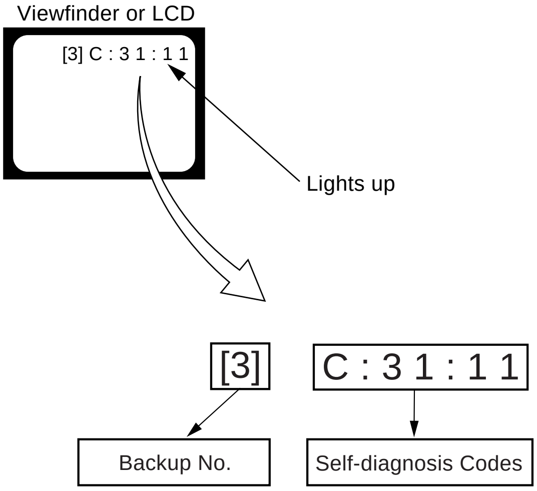
Refer to “4. Self-diagnosis Code Table”.

3. Service Mode Display

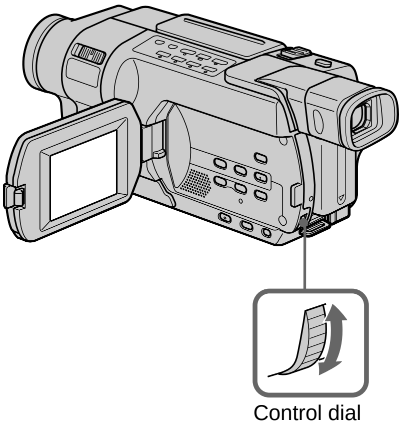
The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the “STOP” key, set the switch from OFF to “VCR”, and continue pressing the “STOP” key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.



Order of previous errors



3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time
[2] : Occurred second time
[3] : Occurred third time
[4] : Occurred fourth time
[5] : Occurred fifth time
[6] : Occurred the last time

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The “self-diagnosis display” data will be backed up by the lithium battery (CONTROL SWITCH BLOCK (CF-3000): BT001). When removing the cabinet (R) (removing the VC-305 board CN1007), the “self-diagnosis display” data will be lost by initialization.

4. Self-diagnosis Code Table

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
C	0 4	0 0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	2 1	0 0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2 2	0 0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3 1	1 0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	1 1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	2 0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	2 3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	3 0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3 1	3 1	FG fault during normal capstan operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 1	PG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 3	PG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 4	Phase fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 2	1 0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	1 1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 1	FG fault during normal capstan operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 0	FG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 1	PG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 2	FG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 3	PG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 4	Phase fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.

Note: Add the sentence as follow.
If other codes are displayed, service is required.
Please send the set to a specialized center.

1. MAIN PARTS

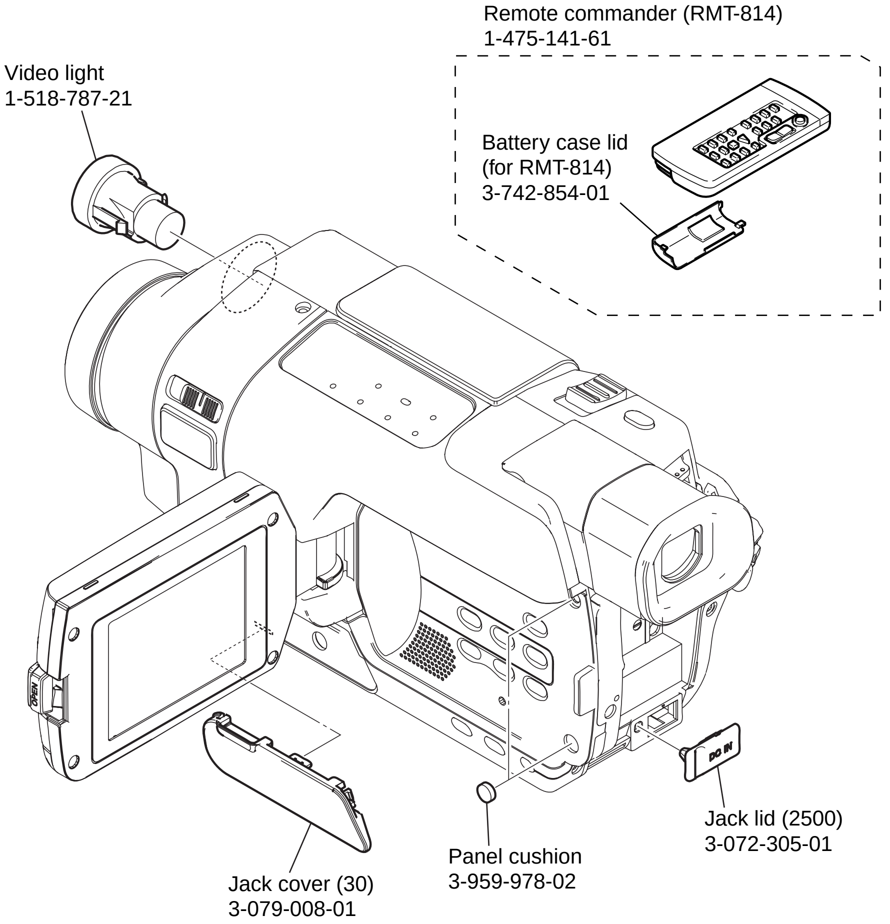
Note:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The parts numbers of such as a cabinet are also appeared in this section. Refer to the parts number mentioned below the name of parts to order.
- Abbreviation
  BR : Brazilian model
  CND: Canadian model
  JE : Tourist model

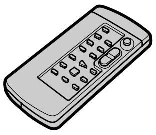
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

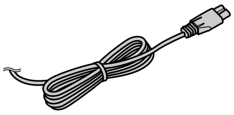
1. ORNAMENTAL PARTS


Remote commander (RMT-814)
1-475-141-61
Video light
1-518-787-21
Battery case lid
(for RMT-814)
3-742-854-01
OPEN
DC IN
Jack lid (2500)
3-072-305-01
Panel cushion
3-959-978-02
Jack cover (30)
3-079-008-01

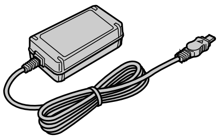
Checking supplied accessories.



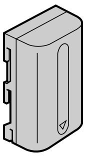
Wireless Remote Commander (1)
RMT-814
1-475-141-61
Battery case lid (for RMT-814)
3-742-854-01



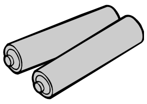
Power Cord (1)
⚠ 1-575-131-11 (E)
⚠ 1-790-107-22 (US, CND)
⚠ 1-790-732-11 (JE)



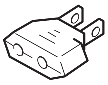
AC-L15A/L15B AC Adaptor (1)
⚠ 1-477-533-31



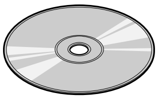
NP-FM30 battery pack (1)
⚠ A-7096-387-A (US, CND)
⚠ A-7096-388-B
(EXCEPT US, CND)



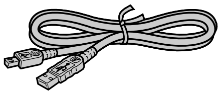
R6 (Size AA) battery
for Remote Commander (2)



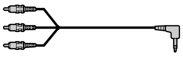
Adaptor, conversion 2P
⚠ 1-569-007-11 (JE)
⚠ 1-569-008-12 (E)



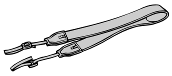
CD-ROM
(SPVD-010 USB Driver) (1)
3-078-942-01 (E, BR, JE)
3-078-943-01 (US, CND)



USB cable (1)
1-823-931-11



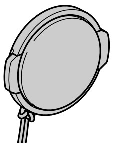
A/V connecting cable
(STEREO) (1)
1-824-097-11



Shoulder strap (1)
3-987-015-01

Other accessories

3-079-467-13	OPERATING INSTRUCTIONS (ENGLISH) (EXCEPT BR)
3-079-467-23	OPERATING INSTRUCTIONS (FRENCH) (CND)
3-079-467-33	OPERATING INSTRUCTIONS (SPANISH, PORTUGUESE) (E, JE)
3-079-467-43	OPERATING INSTRUCTIONS (TRADITIONAL CHINESE) (E)
3-079-467-53	OPERATING INSTRUCTIONS (KOREAN) (JE)
3-079-467-63	OPERATING INSTRUCTIONS (ARABIC) (E)



Lens cap (1)
X-3952-971-1

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Sony EMCS Co.

2003A0500-1

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Published by DI Customer Center

SONY®

3-079-467-**13** (1)

Digital Video Camera Recorder
Video Camera Recorder Hi8

Operating Instructions

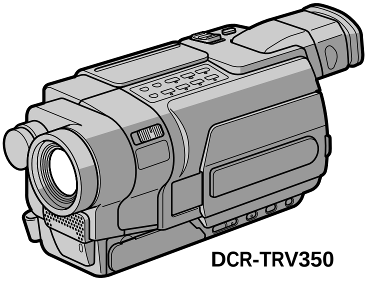
Before operating the unit, please read this manual thoroughly, and retain it for future reference.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. ________ **-TRV** ________ Model No. **AC-**________

Serial No. ________________ Serial No. ________________



DCR-TRV350

Digital Handycam

Handycam Vision™

InfoLITHIUM™ M SERIES

MEMORY STICK™

i.™

Digital 8

DCR-TRV150/TRV250/TRV350/TRV351

video Hi8

CCD-TRV118/TRV318/TRV418 Hi8

©2003 Sony Corporation

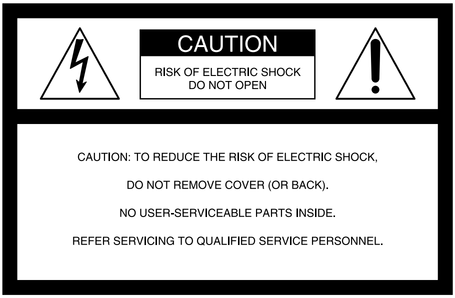
Welcome!

Congratulations on your purchase of this Sony Handycam. With your Handycam, you can capture life’s precious moments with superior picture and sound quality. Your Handycam is loaded with advanced features, but at the same time it is very easy to use. You will soon be producing home video that you can enjoy for years to come.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

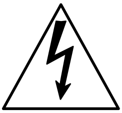
For the customers in the U.S.A.



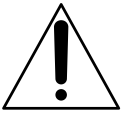
CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

If you have any questions about this product, you may call:
Sony Customer Information Center 1-800-222-SONY (7669)
The number below is for the FCC related matters only.

Regulatory Information

Declaration of Conformity

Trade Name:	SONY
Model No.:	DCR-TRV150, DCR-TRV250
Responsible Party:	Sony Electronics Inc.
Address:	680 Kinderkamack Road, Oradell, NJ07649 U.S.A.
Telephone No.:	201-930-6972

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Declaration of Conformity

Trade Name:	SONY
Model No.:	DCR-TRV350
Responsible Party:	Sony Electronics Inc.
Address:	680 Kinderkamack Road, Oradell, NJ07649 U.S.A.
Telephone No.:	201-930-6972

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- — Reorient or relocate the receiving antenna.
- — Increase the separation between the equipment and receiver.
- — Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- — Consult the dealer or an experienced radio/TV technician for help.

The supplied interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the customers in the U.S.A. and CANADA

CAUTION

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

RECYCLING LITHIUM-ION BATTERIES

Lithium-Ion batteries are recyclable.
You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.

For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit http://www.rbrc.org/.

Caution: Do not handle damaged or leaking Lithium-Ion batteries.

Main Features

On the model name indication

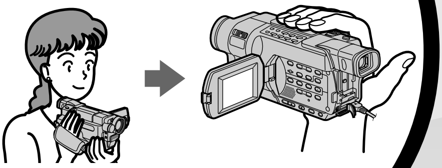
In this manual, camcorder-shape icons are used to indicate model names.

CCD-TRV118 : 118
CCD-TRV318 : 318
CCD-TRV418 : 418

DCR-TRV150 : 150
DCR-TRV250 : 250
DCR-TRV350 : 350
DCR-TRV351 : 351

Instructions with no icons are for all models.
Instructions with icons are for the indicated models only.
Before you start reading this manual, check the model name of your camcorder.

Recording moving or still images, and playing them back



On the tape

- Recording moving pictures (p. 30)
- Recording still images 150 250 (p. 56)
- Playing back a tape (p. 45)

On the “Memory Stick”

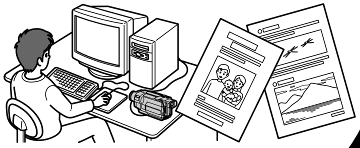
350 351

- Recording still images (p. 132)
- Recording moving pictures (p. 146)
- Viewing still images (p. 163)
- Viewing moving pictures (p. 166)

250 350 351

- Viewing pictures recorded on a tape or live from your camcorder on your computer – USB Streaming (p. 183)
- Capturing images on your computer from your camcorder using the USB cable (p. 197)
- Viewing images recorded on a “Memory Stick” using the USB cable 350 351 (p. 185)
- Converting an analog signal into digital to capture images onto your computer 350 351 (p. 208)

Capturing images on your computer



Other uses

Functions for adjusting exposure in the recording mode

- BACK LIGHT (p. 38)
- NightShot (p. 39)
- Super NightShot/Color Slow Shutter 350 351 (p. 39, 40)
- PROGRAM AE (p. 68)
- Adjusting the exposure manually (p. 70)
- Built-in light (p. 79)

Functions for giving images more impact

- Digital zoom (p. 34) The default setting is **OFF**. (To zoom greater than 20×, select the digital zoom power in **D ZOOM** in the menu settings.)
- Fader (p. 61)
- Picture effect (In recording mode) (p. 64)
- Digital effect (In recording mode) 350 351 (p. 65)
- Title (p. 75, 77)
- MEMORY MIX 350 351 (p. 140)

Functions for giving a natural appearance to your recordings

- SPORTS (p. 68)
- LANDSCAPE (p. 68)
- Manual focus (p. 71)

Functions for use on recorded tapes

- END SEARCH (p. 43)
- EDITSEARCH/Rec Review 350 351 (p. 43)
- DATA CODE 250 350 351 (p. 47)
- Tape PB ZOOM 350 351 (p. 87)
- ZERO SET MEMORY 250 350 351 (p. 89)
- Easy Dubbing 118 318 418 (p. 98)
- Digital program editing 150 250 350 351 (p. 106)

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, storage media, etc.

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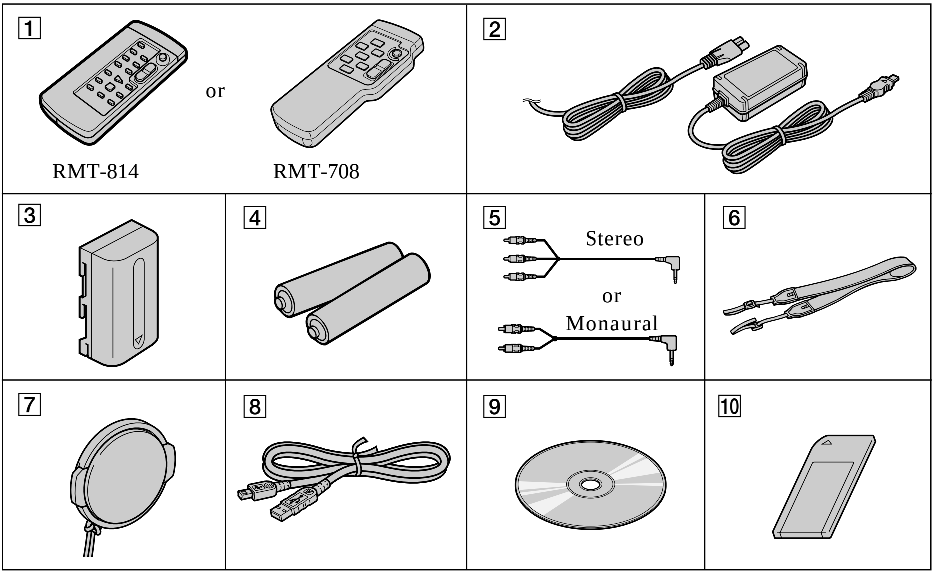
- 8, Hi8 and D are trademarks.
- i.LINK and i are trademarks.
- “InfoLITHIUM” is a trademark of Sony Corporation.
- “Memory Stick,” MEMORY STICK and “MagicGate Memory Stick” are trademarks of Sony Corporation.
- “Memory Stick Duo” and MEMORY STICK DUO are trademarks of Sony Corporation.
- Windows and Windows Media are trademarks or registered trademarks of Microsoft Corporation in the United States and / or other countries.
- Pentium is trademark or registered trademark of Intel Corporation.
- Macintosh and Mac OS, QuickTime are trademarks of Apple Computer Inc.
- All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies. Furthermore, “™” and “®” are not mentioned in each case in this manual.

Checking supplied accessories

Make sure that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander** (1) (p. 264)

RMT-814: 250 350 351

RMT-708: 418

2 **AC-L15A/L15B AC Adaptor** (1), **Power cord** (1) (p. 19)

3 **NP-FM30 Rechargeable Battery Pack** (1) (p. 18, 19)

4 **Size AA (R6) battery for Remote Commander** (2) 418 250 350 351 (p. 264)

5 **A/V connecting cable** (1) (p. 51, 94, 95)

Stereo: 150 250 350 351

Monaural: 118 318 418

6 **Shoulder strap** (1) (p. 256)

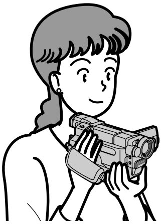
7 **Lens cap** (1) (p. 30)

8 **USB cable** (1) 250 350 351 (p. 182)

9 **CD-ROM (SPVD-010 USB Driver)** (1) 250 350 351 (p. 189)

10 **"Memory Stick"** (1) 351 (p. 240)

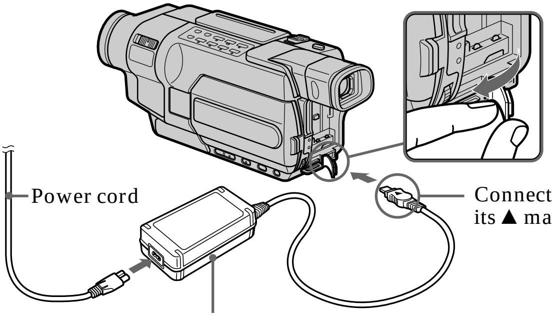
Quick Start Guide – Recording on a tape



This chapter introduces you to the basic features to record on a tape of your camcorder. See the page in parentheses “(   )” for more information.

1 Connecting the power cord (p. 24)

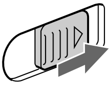
Use the battery pack when using your camcorder outdoors (p. 18).


Open the DC IN jack cover.
Power cord
Connect the plug with its ▲ mark facing up.

AC Adaptor (supplied)

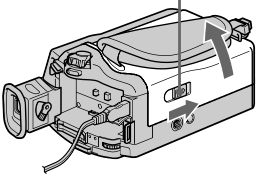
2 Inserting a cassette (p. 28)

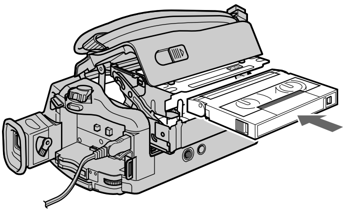
❶ Slide ◣OPEN / EJECT in the direction of the arrow and open the lid.

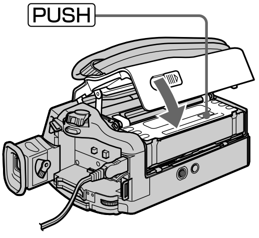


❷ Push the center of the cassette back and insert the cassette properly with the cassette window facing up.

❸ Close the cassette compartment by pressing PUSH on the cassette compartment. After the cassette compartment goes down completely, close the lid.





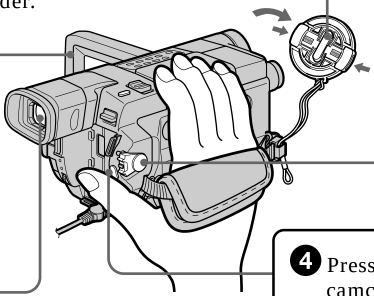


3 Recording a picture (p. 30)

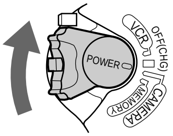
❶ Remove the lens cap.

The cap is not attached when you purchase your camcorder.

❸ Open the LCD panel while pressing OPEN. The picture appears on the LCD screen.



❷ Set the POWER switch to CAMERA while pressing the small green button.

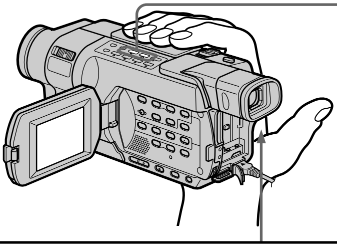


❹ Press START/STOP. Your camcorder starts recording. To stop recording, press START/STOP again.

Viewfinder
View a picture placing your eye against this part when the LCD panel is closed (p. 32).
Adjust the viewfinder lens to your eyesight (p. 35).
The picture in the viewfinder is black and white.

When you purchase your camcorder, the clock is not set up yet. If you want to record the date and time for a picture, set the clock before recording (p. 26).

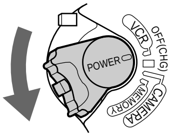
4 Monitoring the playback picture on the LCD screen (p. 45)



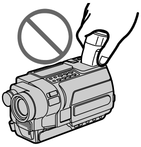
❷ Press ◀◀ to rewind the tape.

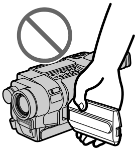
❸ Press ▶ to start playback.

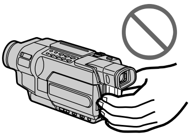
❶ Set the POWER switch to VCR/PLAYER while pressing the small green button.*



Note
Do not pick up your camcorder by the viewfinder, the LCD panel, or the battery pack.



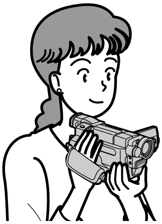




* Modes on the POWER switch vary depending on models (p. 16).

Quick Start Guide – Recording on a "Memory Stick"

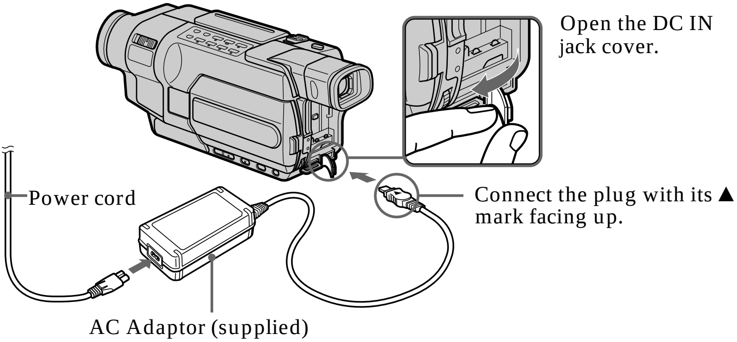
350 **351**



This chapter introduces you to the basic features to record on a "Memory Stick" of your camcorder. See the page in parentheses "( )" for more information.

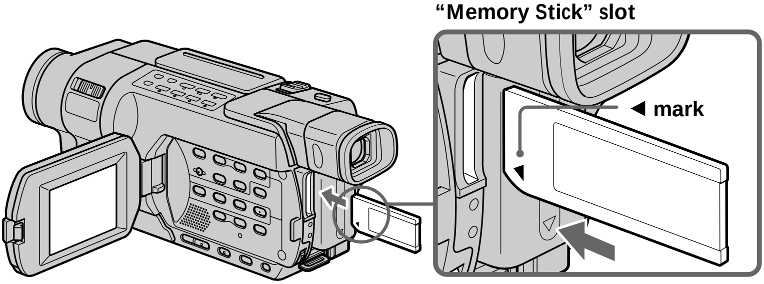
1 Connecting the power cord (p. 24)

Use the battery pack when using your camcorder outdoors (p. 18).


Open the DC IN jack cover.
Power cord
Connect the plug with its ▲ mark facing up.
AC Adaptor (supplied)

2 Inserting a "Memory Stick" (p. 127)

Insert a "Memory Stick" in the "Memory Stick" slot as far as it can go with the ◀ mark facing the LCD panel as illustrated.


"Memory Stick" slot
◀ mark

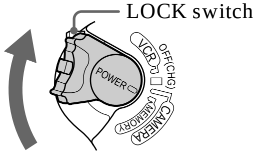
When ejecting the "Memory Stick," press the "Memory Stick" once lightly.

3 Recording a still image on a “Memory Stick” (p. 132)

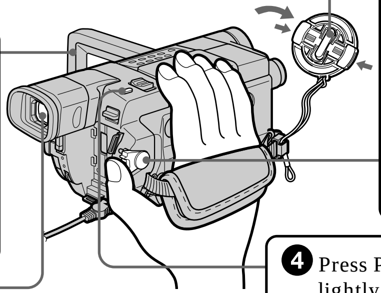
❶ Remove the lens cap.

The cap is not attached when you purchase your camcorder.

❷ Set the POWER switch to MEMORY while pressing the small green button. Make sure that the LOCK switch is set to the left (unlock) position.

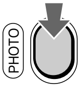


❸ Open the LCD panel while pressing OPEN. The picture appears on the screen.

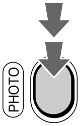


Viewfinder
View a picture placing your eye against this part when the LCD panel is closed (p. 32).
Adjust the viewfinder lens to your eyesight (p. 35).
The picture in the viewfinder is black and white.

❹ Press PHOTO lightly.

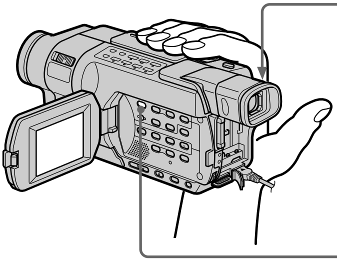


❺ Press PHOTO deeper.

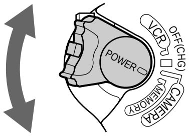


When you purchase your camcorder, the clock is not set up yet. If you want to record the date and time for a picture, set the clock before recording (p. 26).

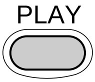
4 Monitoring the playback still images on the LCD screen (p. 163)



❶ Set the POWER switch to MEMORY or VCR while pressing the small green button.

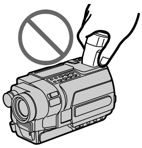


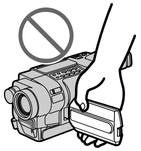
❷ Press MEMORY PLAY. The last recorded image is displayed.

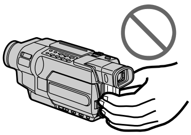


Press MEMORY +/– to select the desired image.

Note
Do not pick up your camcorder by the viewfinder, the LCD panel or the battery pack.







Using this manual

The instructions in this manual are for the seven models listed in the table below. Before you start reading this manual and operating your camcorder, check the model number by looking at the bottom of your camcorder. The DCR-TRV350 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, “350.”
As you read through this manual, buttons and settings on your camcorder are shown in capital letters.

e.g. Set the POWER switch to CAMERA.

When you carry out an operation, you can hear a beep to indicate that the operation is being carried out.

Types of differences

Model	videoHi8			Digital8		
	118	318	418	150	250	350 351
Recording system	Hi8	Hi8	Hi8	Digital8	Digital8	Digital8
Playback system	Hi8 / 8	Hi8 / 8	Hi8 / 8	Digital8	Digital8	Digital8 / Hi8 / 8
AUDIO / VIDEO jack	OUT	OUT	OUT	OUT	OUT	IN / OUT
S VIDEO jack	OUT	OUT	OUT	OUT	OUT	IN / OUT
DV jack	—	—	—	IN / OUT	IN / OUT	IN / OUT
USB jack	—	—	—	—	●	●
“Memory Stick” slot	—	—	—	—	—	●
LANC jack	—	—	—	—	—	●
SteadyShot	—	●	●	●	●	●
Remote sensor	—	—	●	—	●	●
RFU jack	●	●	●	—	—	—
MIC jack	—	—	—	—	—	●

● Provided
— Not provided

Before using your camcorder

With your camcorder, you can use the tapes and record / playback on the systems below. To enable smooth transition, we recommend that you do not mix pictures recorded in the Hi8 / standard 8 mm with the Digital8 system on a tape.

350 351

Usable cassette tapes	Hi8 / Digital8 (recommended)	Standard 8 mm *[1]
Recording system	Digital8	
Playback system *[2]	Digital8	
	Hi8	Standard 8 mm

150 250

Usable cassette tapes	Hi8 / Digital8 (recommended)	Standard 8 mm *[1]
Recording system	Digital8	
Playback system	Digital8	

118 318 418

Usable cassette tapes	Hi8	Standard 8 mm
Recording system	Hi8 *[3]	Standard 8 mm
Playback system *[2]	Hi8	Standard 8 mm

*[1] If you use standard 8 mm tape, be sure to play back the tape on your camcorder. Mosaic noise may appear when you play back standard 8 mm tape on other VCRs (including another DCR-TRV150 / TRV250 / TRV350 / TRV351).

*[2] When you play back a tape, the Hi8 system or standard 8 mm system is automatically detected and the playback system automatically switches to.

*[3] If you record on a Hi8 video cassette in the LP mode, recording is carried out in the standard 8 mm system.

Note on TV color systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

Copyright precautions 150 250 350 351

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Note on connecting other equipment 150 250 350 351

When you connect your camcorder to other video equipment or a computer using the USB cable or i.LINK cable, observe the shape of the jack.
If you forcibly insert the plug, the jack may be damaged and they may result in a malfunction of your camcorder.

On the model name indication

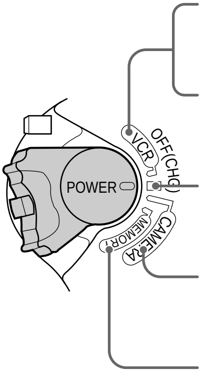
In this manual, camcorder-shape icons are used to indicate model names.

CCD-TRV118 : 118	**DCR-TRV150 :** 150
CCD-TRV318 : 318	**DCR-TRV250 :** 250
CCD-TRV418 : 418	**DCR-TRV350 :** 350
	DCR-TRV351 : 351

Instructions with no icons are for all models.
Instructions with icons are for the indicated models only.
Before you start reading this manual, check the model name of your camcorder.

On the POWER switch

Modes on the POWER switch vary depending on models.
Consider this when following the operating instructions.



VCR : 150 250 350 351
e.g. Set the POWER switch to VCR.

or

PLAYER : 118 318 418
e.g. Set the POWER switch to PLAYER.

OFF (CHG) : Common to all models
e.g. Set the POWER switch to OFF (CHG).

CAMERA : Common to all models
e.g. Set the POWER switch to CAMERA.

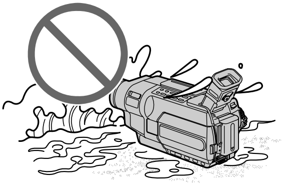
MEMORY : 350 351
e.g. Set the POWER switch to MEMORY.

Precautions on camcorder care

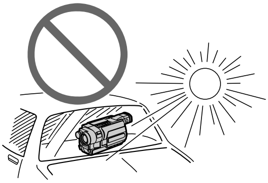
Lens and LCD screen/finder

- **The LCD screen and the finder are manufactured using extremely high-precision technology so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue or green in color) that constantly appear on the LCD screen and the finder. These points are normal in the manufacturing process and do not affect the recording in any way.**
- Do not let your camcorder become wet. Keep your camcorder away from rain and sea water. Letting your camcorder become wet may cause your camcorder to malfunction. Sometimes this malfunction cannot be repaired **[a]**.
- Never leave your camcorder exposed to temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight **[b]**.
- Be careful when placing the camera near a window or outdoors. Exposing the LCD screen, the finder or the lens to direct sunlight for long periods may cause malfunctions **[c].**
- Do not directly shoot the sun. Doing so might cause your camcorder to malfunction. Take pictures of the sun in low light conditions such as dusk **[d].**

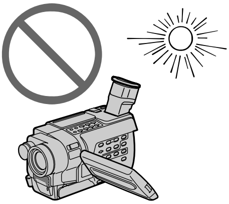
[a]



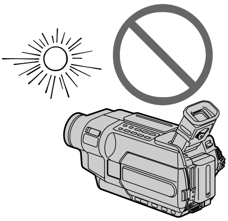
[b]



[c]



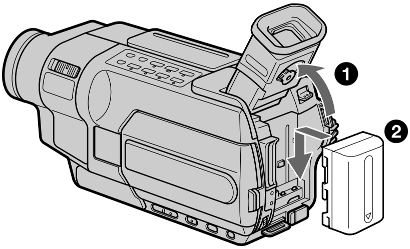
[d]



Step 1 Preparing the power supply

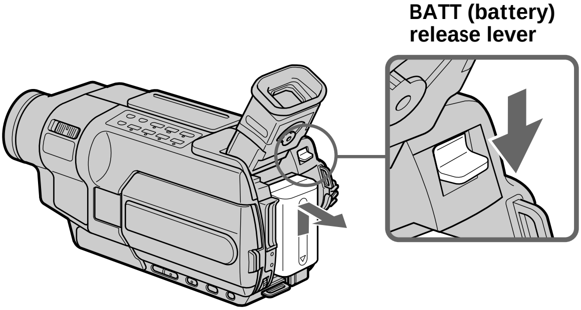
Installing the battery pack

(1) Lift up the viewfinder.
(2) Slide the battery pack down until it clicks.

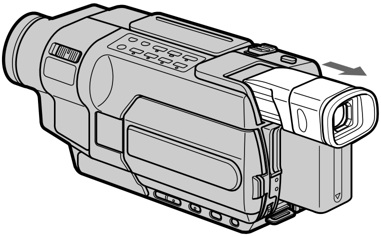


To remove the battery pack

(1) Lift up the viewfinder.
(2) Slide the battery pack out in the direction of the arrow while pressing the BATT (battery) release lever down.



If you install the large-capacity battery pack
If you install the NP-FM70 / QM71 / QM71D / FM90 / FM91 / QM91 / QM91D battery pack on your camcorder, extend the viewfinder.

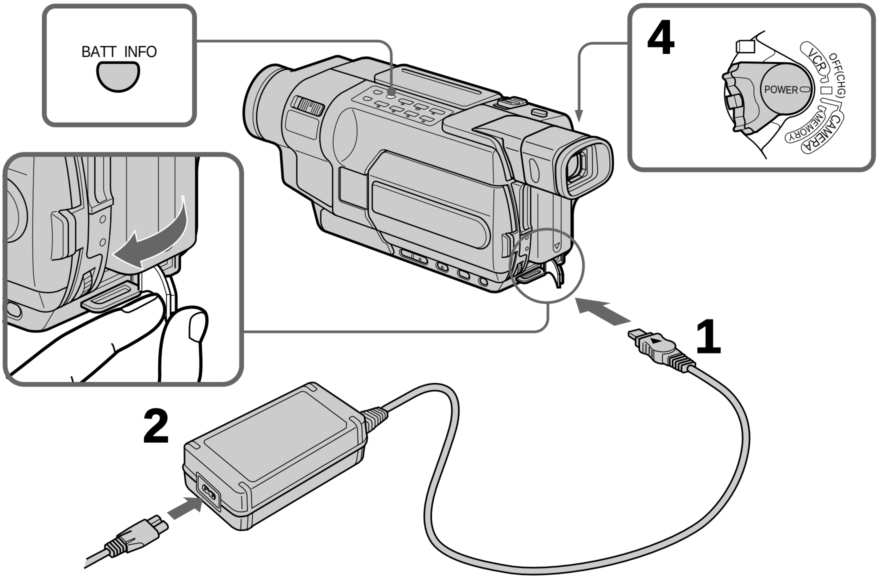


Step 1 Preparing the power supply

Charging the battery pack

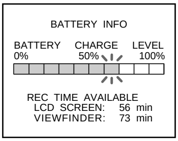
Use the battery pack after charging it for your camcorder.
Your camcorder operates only with the **"InfoLITHIUM" battery pack (M series)**.
See page 242 for details of "InfoLITHIUM" battery pack.

(1) Open the DC IN jack cover and connect the AC Adaptor supplied with your camcorder to the DC IN jack with the plug's ▲ mark facing up.
(2) Connect the power cord to the AC Adaptor.
(3) Connect the power cord to a wall outlet.
(4) Set the POWER switch to OFF (CHG).
The charge lamp lights up when charging begins.



To check the state of the battery (BATTERY INFO)

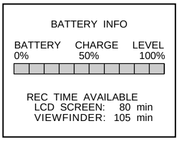
Open the LCD panel while pressing OPEN, then press BATT INFO.
The BATTERY INFO is displayed for about seven seconds.


BATTERY INFO
BATTERY CHARGE LEVEL
0% 50% 100%
REC TIME AVAILABLE
LCD SCREEN: 56 min
VIEWFINDER: 73 min

Charging

⇩

The battery charge level is displayed as percentage and recordable time with the LCD screen / viewfinder.
The battery charge level is displayed in 10% increments.


BATTERY INFO
BATTERY CHARGE LEVEL
0% 50% 100%
REC TIME AVAILABLE
LCD SCREEN: 80 min
VIEWFINDER: 105 min

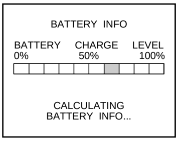
Full charge

When the battery is fully charged, the battery charge level indicator shows 100% and the charge lamp goes out.

After charging the battery pack

Disconnect the AC Adaptor from the DC IN jack on your camcorder.

Until the remaining battery charge is calculated


BATTERY INFO
BATTERY CHARGE LEVEL
0% 50% 100%
CALCULATING
BATTERY INFO...

The battery charge level indicator moves flashing and "CALCULATING BATTERY INFO..." is displayed.

Note

Prevent metallic objects from coming into contact with the metal parts on the DC plug of the AC Adaptor. This may cause a short-circuit, damaging the AC Adaptor.

When you use the AC Adaptor

Place the AC Adaptor near a wall outlet. If any trouble occurs with this unit, disconnect the plug from the wall outlet as soon as possible to cut off the power.

The numeric value displayed in the BATTERY INFO

Refer to the value displayed in the BATTERY INFO as a rough standard.

To display the BATTERY INFO longer

Press BATT INFO again while the BATTERY INFO is still displayed. The information is displayed for another seven seconds.
If you keep pressing BATT INFO, the BATTERY INFO is displayed for up to about 20 seconds.

The BATTERY INFO is not displayed in the following cases:

– The POWER switch is not set to OFF (CHG).
– The battery pack is not installed properly.
– The battery pack is fully discharged.

If the power goes off although the remaining battery time indicator indicates that the battery pack has enough power to operate

Charge the battery pack fully again so that the indication is correct.

What is "InfoLITHIUM"?

The "InfoLITHIUM" is a lithium ion battery pack that can exchange data such as battery consumption with compatible electronic equipment. This unit is compatible with the "InfoLITHIUM" battery pack (M series). Your camcorder operates only with the "InfoLITHIUM" battery. "InfoLITHIUM" M series battery packs have the InfoLITHIUM™ M SERIES mark (p. 242).

Charging time

Battery pack	Full charge
NP-FM30 (supplied)	145
NP-FM50	150
NP-FM70	240
NP-QM71 / QM71D	260
NP-FM90	330
NP-FM91 / QM91 / QM91D	360

Approximate minutes to charge an empty battery pack at 25°C (77°F).

The charging time may increase if the battery's temperature is extremely high or low because of the ambient temperature.

Recording time

350 351

Battery pack	Recording with the viewfinder		Recording with the LCD screen	
	Continuous	Typical*	Continuous	Typical*
NP-FM30 (supplied)	105	50	80	40
NP-FM50	170	85	130	70
NP-FM70	355	175	270	145
NP-QM71 / QM71D	415	205	315	165
NP-FM90	540	270	410	215
NP-FM91 / QM91 / QM91D	625	310	475	250

150 250

Battery pack	Recording with the viewfinder		Recording with the LCD screen	
	Continuous	Typical*	Continuous	Typical*
NP-FM30 (supplied)	115	55	85	40
NP-FM50	185	90	140	70
NP-FM70	385	190	295	145
NP-QM71 / QM71D	445	220	340	165
NP-FM90	580	285	450	220
NP-FM91 / QM91 / QM91D	670	330	520	255

118 318 418

Battery pack	Recording with the viewfinder		Recording with the LCD screen	
	Continuous	Typical*	Continuous	Typical*
NP-FM30 (supplied)	165	80	120	60
NP-FM50	265	130	195	100
NP-FM70	540	265	400	205
NP-QM71 / QM71D	640	315	465	235
NP-FM90	820	400	600	305
NP-FM91 / QM91 / QM91D	955	465	695	355

Approximate minutes when you use a fully charged battery

* Approximate recording time.
The actual battery life may be shorter in the following cases:
– When you repeat recording start / stop, zooming and turning the power on / off.
– When the battery is used repeatedly or self-discharged after charging (p. 242).

Playing time

350 351

Battery pack	Playing on the LCD screen	Playing with the LCD closed
NP-FM30 (supplied)	80	120
NP-FM50	135	195
NP-FM70	285	400
NP-QM71 / QM71D	335	465
NP-FM90	435	600
NP-FM91 / QM91 / QM91D	505	695

150 250

Battery pack	Playing on the LCD screen	Playing with the LCD closed
NP-FM30 (supplied)	90	130
NP-FM50	150	210
NP-FM70	310	430
NP-QM71 / QM71D	365	505
NP-FM90	475	655
NP-FM91 / QM91 / QM91D	550	755

118 318 418

Battery pack	Playing on the LCD screen	Playing with the LCD closed
NP-FM30 (supplied)	120	175
NP-FM50	195	280
NP-FM70	400	570
NP-QM71 / QM71D	465	675
NP-FM90	600	865
NP-FM91 / QM91 / QM91D	695	1010

Approximate minutes when you use a fully charged battery

Note

Approximate continuous playing time at 25°C (77°F). The battery life will be shorter if you use your camcorder in a cold environment.

Playback time 350 351

The table shows the playing time for tapes recorded in the Digital8 system.
The playing time of tapes recorded in the Hi8 Hi8/standard 8 mm 8 system is reduced by about 20%.

You can charge the battery in other countries

For details, see page 246.

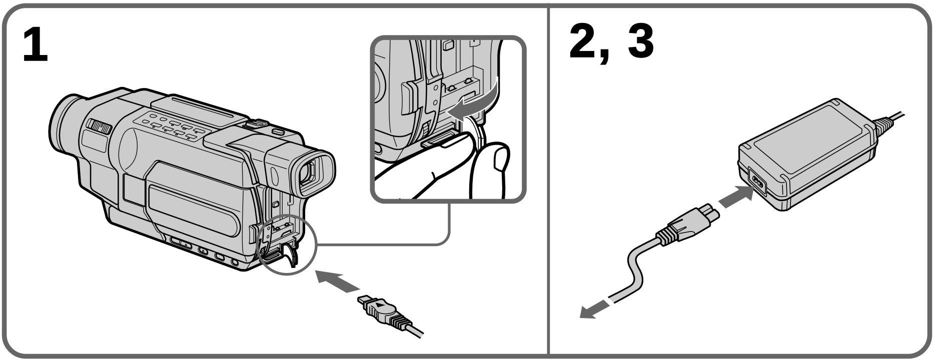
Recommended charging temperature

We recommend charging the battery pack in an ambient temperature of between 10°C to 30°C (50°F to 86°F).

Connecting to a wall outlet

When you use your camcorder for a long time, we recommend that you power it from a wall outlet using the AC Adaptor.

(1) Open the DC IN jack cover, and connect the AC Adaptor to the DC IN jack on your camcorder with the plug's ▲ mark facing up.
(2) Connect the power cord to the AC Adaptor.
(3) Connect the power cord to a wall outlet.



PRECAUTION

The set is not disconnected from the AC power source (house current) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Notes

- The AC Adaptor can supply power even if the battery pack is attached to your camcorder.
- The DC IN jack has "source priority." This means that the battery pack cannot supply any power if the power cord is connected to the DC IN jack, even when the power cord is not plugged into a wall outlet.
- Place the AC Adaptor near a wall outlet.
  While using the AC Adaptor, if any trouble occurs with this unit, disconnect the plug from the wall outlet as soon as possible to cut off the power.

Using a car battery

Use Sony Car Battery Adaptor (optional). Refer to the operating instructions of the Car Battery Adaptor for further information.

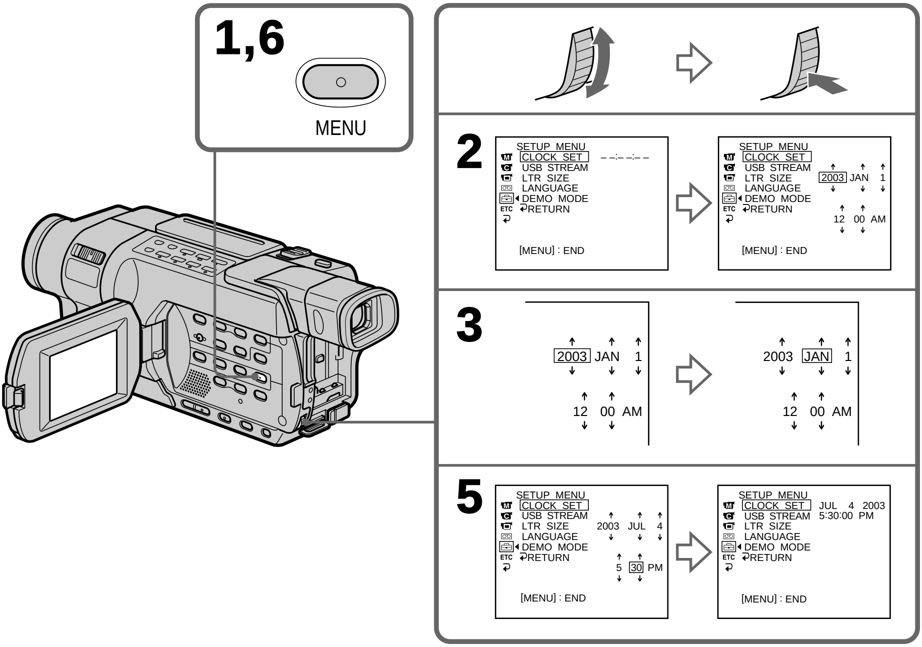
Step 2 Setting the date and time

Set the date and time when you use your camcorder for the first time.
“CLOCK SET” will be displayed each time when you set the POWER switch to CAMERA or MEMORY unless you set the date and time settings.*

If you do not use your camcorder **for about three months**, the date and time settings may be cleared from memory (bars may appear) because the built-in rechargeable battery will have been discharged (p. 249).
Set the date and time after charging the built-in battery fully.

Set the year, then the month, the day, the hour and then the minute.

(1) Set the POWER switch to CAMERA or MEMORY, and then press MENU to display the menu settings.*
(2) Turn the SEL/PUSH EXEC dial to select CLOCK SET in 🧰, then press the dial.
(3) Turn the SEL/PUSH EXEC dial to select the desired year, then press the dial.
(4) Set the month, day and hour by turning the SEL/PUSH EXEC dial and pressing the dial.
(5) Set the minute by turning the SEL/PUSH EXEC dial and pressing the dial by the time signal. The clock starts.
(6) Press MENU to make the menu settings disappear.


1,6
MENU
2
SETUP MENU
CLOCK SET
USB STREAM
LTR SIZE
LANGUAGE
DEMO MODE
RETURN
– –:– –:– –
[MENU] : END
2003 JAN 1
12 00 AM
3
2003 JAN 1
12 00 AM
5
2003 JUL 4
5 30 PM
JUL 4 2003
5:30:00 PM

* Modes on the POWER switch vary depending on models (p. 16).

The year changes as follows:

2000 ←····→ 2003 ←····→ 2079

To check the preset date and time 118 318 418

Press DATE to display the date indicator.
Press TIME to display the time indicator.
Press DATE (or TIME) and then press TIME (or DATE) to simultaneously display the date and time indicator.
Press DATE and/or TIME again. The date and/or time indicator disappears.

Auto date function 118 318 418

When you use your camcorder for the first time, turn it on and set the date and time to your local time before you start recording (p. 26). The date is automatically recorded for 10 seconds after you start recording **(Auto date function)**. This function works only once a day.

If you do not set the date and time

"--- -- ----" "--:--:--" is recorded on the tape 250 350 351 or the "Memory Stick" 350 351 .

Note on the time indicator

The internal clock of your camcorder operates on a 12-hour cycle.
- 12:00 AM stands for midnight.
- 12:00 PM stands for noon.

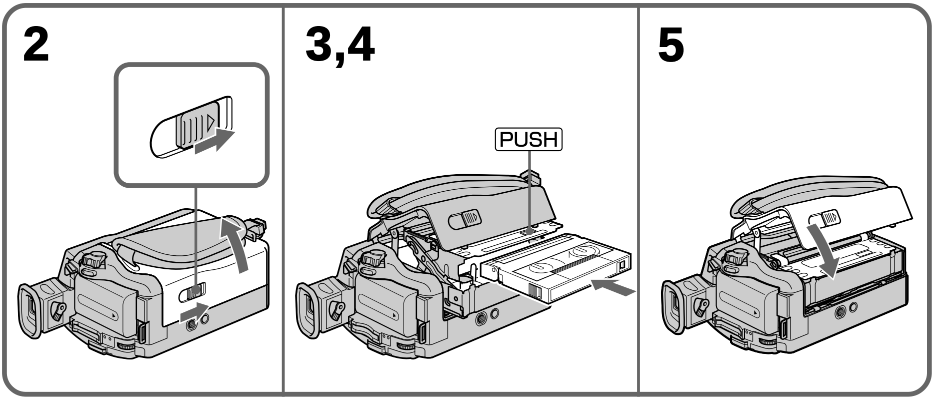
Note on the auto date function 118 318 418

You can change the AUTO DATE setting by selecting ON or OFF in the menu settings.
The auto date function automatically displays the date once a day.
However, the date may automatically appear more than once a day if:
– you set the date and time.
– you eject and insert the tape again.
– you stop recording within 10 seconds.
– you set AUTO DATE to OFF once and set it back to ON in the menu settings.

Step 3 Inserting a cassette

See page 15 for details about the usable cassettes types.

(1) Prepare the power source (p. 18).
(2) Slide OPEN/EJECT in the direction of the arrow and open the lid.
The cassette compartment automatically lifts up and opens.
(3) Push the center of the cassette back and insert the cassette properly with the cassette window facing up.
(4) Close the cassette compartment by pressing PUSH on the cassette compartment.
The cassette compartment automatically goes down.
(5) After the cassette compartment goes down completely, close the lid until it clicks.



To eject the cassette

Follow the procedure above, and take out the cassette in step **(3)**.

Notes

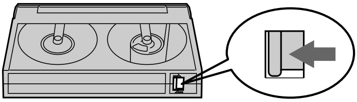
- Do not press the cassette compartment down. Doing so may cause a malfunction.
- The cassette compartment may not be closed when you press any part of the cassette compartment other than the PUSH mark.

150 **250** **350** **351**

- Your camcorder records pictures in the Digital8 system.
- The recording time when you use your camcorder is half of the indicated time on Hi8 Hi8 tape. If you select the LP mode in the menu settings, the recording time is 3/4 of the indicated time on Hi8 Hi8 tape.
- If you use standard 8 mm 8 tape, be sure to play back the tape on your camcorder. Mosaic noise may appear when you play back standard 8 mm 8 tape on other camcorders (including another DCR-TRV150/TRV250/TRV350/TRV351).

To prevent accidental erasure

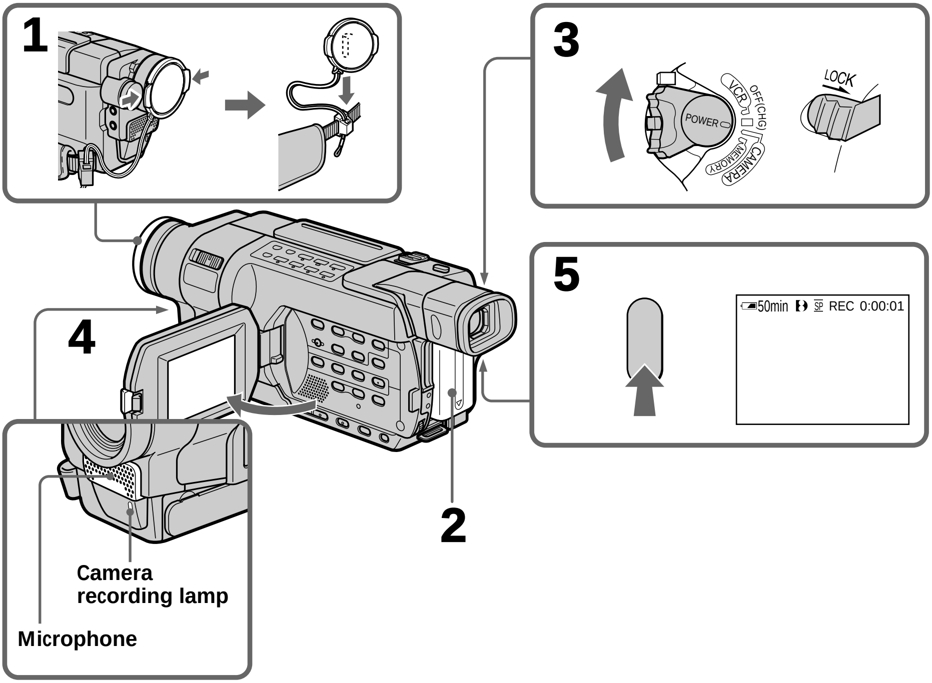
Slide the write-protect tab on the cassette to expose the red mark.



Recording a picture

Your camcorder automatically focuses.

(1) Remove the lens cap and attach the lens cap to the grip strap.
(2) Install the power source and insert a cassette. See “Step 1” to “Step 3” for more information (p. 18 to 29).
(3) Set the POWER switch to CAMERA while pressing the small green button. This sets your camcorder to the standby mode.
(4) Open the LCD panel while pressing OPEN. The viewfinder automatically turns off.
(5) Press START/STOP. Your camcorder starts recording. The REC indicator appears on the screen. The camera recording lamp located on the front of your camcorder lights up. To stop recording, press START/STOP again.
The recording lamp lights up in the viewfinder when you record with the viewfinder.



Notes

- The data code (date/time when recorded) are not displayed during recording. However, they are recorded automatically onto the tape. To display the data code (date/time), press DATA CODE on the Remote Commander during playback. **250** **350** **351**
- Fasten the grip strap firmly.
- Do not touch the built-in microphone during recording.

Note on the LOCK switch 350 351

When you slide the LOCK switch to the right, the POWER switch can no longer be set to MEMORY accidentally. The LOCK switch is set to the left as the default setting.

Note on recording mode

Your camcorder records and plays back in the SP (standard play) mode or in the LP (long play) mode. Select SP or LP in the menu settings (p. 219). In the LP mode, you can record **longer** than in SP mode.*1) When you record a tape in the LP mode on your camcorder, we recommend that you play back the tape on your camcorder.

To enable smooth transition

Transition between the last scene you recorded and the next scene is smooth as long as you do not eject the cassette even if you turn off your camcorder.

However, check the following:

– Do not mix recordings in the SP mode and in the LP mode on one tape.

– When you change the battery pack, set the POWER switch to OFF (CHG).

If you leave your camcorder in the standby mode for a certain period *2) while the cassette is inserted

Your camcorder automatically turns off. This is to save battery power and to prevent battery and tape wear. To resume the standby mode, set the POWER switch to OFF (CHG) once, then turn it to CAMERA again. However, your camcorder does not turn off automatically while the cassette is not inserted.

To set the counter to 0:00:00 118 318 418

Press COUNTER RESET (p. 259).

When you record in the SP and LP modes on one tape or you record some scenes in the LP mode

- The time code may not be written properly between scenes. 150 250 350 351
- The transition between scenes may not be smooth.
- The playback picture may be distorted.

*1) 1.5 times: 150 250 350 351
Twice: 118 318 418
*2) three minutes: 150 250 350 351
five minutes: 118 318 418

After recording

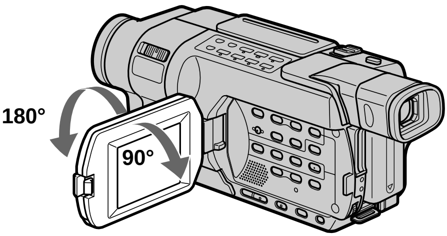
(1) Set the POWER switch to OFF (CHG).
(2) Close the LCD panel.
(3) Eject the cassette.
(4) Attach the lens cap.
(5) Remove the battery pack.

After using your camcorder

Remove the battery pack from your camcorder to avoid turning on the built-in light accidentally.

Adjusting the LCD screen

The LCD panel can be opened up to 90 degrees. The LCD panel moves about 90 degrees to the viewfinder side and about 180 degrees to the lens side (from the initial opening position).



When closing the LCD panel, set it vertically until it clicks, and swing it into the camcorder body.

Note

When using the LCD screen except in the mirror mode, the viewfinder is automatically turned off.

Notes on the LCD screen

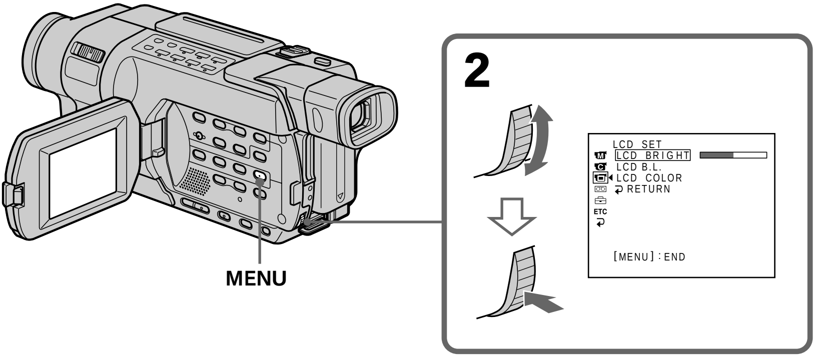
- When you use the LCD screen outdoors in direct sunlight, the LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.
- When you adjust angles of the LCD panel, make sure if the LCD panel is opened up to 90 degrees.

When recording with the LCD panel opened

Recording time becomes a little shorter compared with when recording with the LCD panel closed.

Adjusting the brightness of the LCD screen

(1) Set the POWER switch to CAMERA, VCR / PLAYER or MEMORY.*
(2) Turn the SEL / PUSH EXEC dial to select LCD BRIGHT in ▣ in the menu settings, then press the dial (p. 216).
(3) Turn the SEL / PUSH EXEC dial to adjust the brightness of the LCD screen with LCD BRIGHT, then press the dial.
(4) Press MENU to make the menu settings disappear.



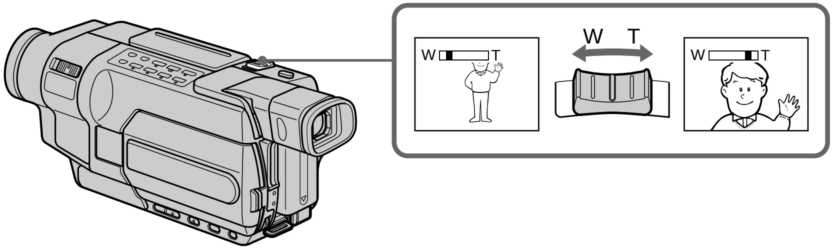
LCD screen backlight

- You can adjust the brightness of the backlight. Select LCD B.L. in the menu settings when using the battery pack (p. 216).
- Even if you adjust the LCD screen backlight, the recorded picture will not be affected.

* Modes on the POWER switch vary depending on models (p. 16).

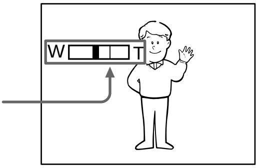
Using the zoom feature

Set the POWER switch to CAMERA or MEMORY.*
Move the power zoom lever a little for a slower zoom. Move it further for a faster zoom.
Using the zoom function sparingly results in better-looking recordings.
“T” side: for telephoto (subject appears closer)
“W” side: for wide-angle (subject appears farther away)



To use zoom greater than 20×

Zoom greater than 20× is performed digitally. To activate digital zoom, select the digital zoom power in D ZOOM in the menu settings. The digital zoom function is set to OFF as a default setting (p. 212).



The right side of the bar shows the digital zooming zone.
The digital zooming zone appears when you select the digital zoom power in the menu settings.

Notes on digital zoom

- Digital zoom power can be set to 40× or 700×. 250 350 351
- Digital zoom power can be set to 40× or 560×. 118 318 418 150
- The picture quality deteriorates as you move the power zoom lever towards the “T” side.

When you shoot close to a subject

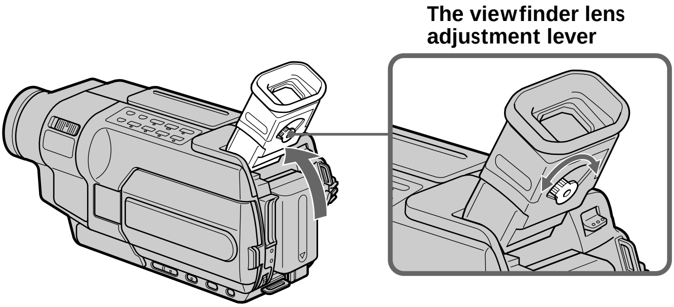
If you cannot get a sharp focus, move the power zoom lever to the “W” side until the focus is sharp. You can shoot a subject that is at least about 80 cm (about 2 feet 5/8 inch) away from the lens surface in the telephoto position, or about 1 cm (about 1/2 inch) away in the wide-angle position.

* Modes on the POWER switch vary depending on models (p. 16).

Adjusting the viewfinder lens

If you record pictures with the LCD panel closed, check the picture with the viewfinder. Adjust the viewfinder lens to your eyesight so that the indicators in the viewfinder come into sharp focus.

Set the POWER switch to CAMERA, VCR/PLAYER or MEMORY.*
Lift up the viewfinder and move the viewfinder lens adjustment lever.



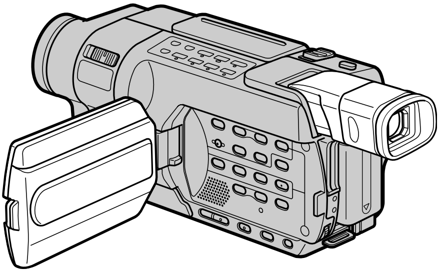
Shooting with the Mirror Mode

The subject uses this feature to check his or her own image on the LCD screen while you look at the subject in the viewfinder.

Set the POWER switch to CAMERA or MEMORY, and rotate the LCD screen 180 degrees.*

118 318 418

The ☺ indicator appears in the viewfinder and on the LCD screen.
II● appears in the standby mode, and ● appears in the recording mode. Some of other indicators appear mirror-reversed and others are not displayed.



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* Modes on the POWER switch vary depending on models (p. 16).

Pictures in the mirror mode

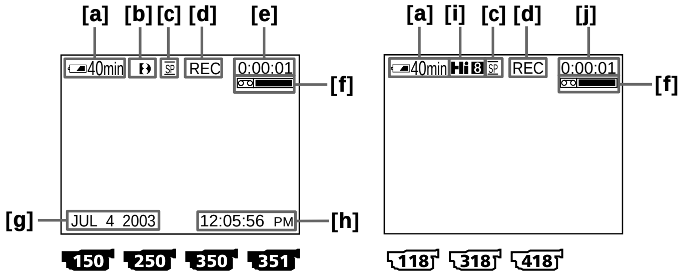
The picture on the LCD screen is a mirror-image. However, the picture will be normal when recorded.

During recording in the mirror mode 118 318 418

DATE and TIME on your camcorder do not work.

Indicators displayed in the recording mode

The indicators are not recorded on the tape.



[a] :Remaining battery time indicator
[b] :Format indicator
[c] : Mirror mode indicator 118 318 418/
Recording mode indicator
[d] :STBY/REC indicator
[e] :Tape photo recording indicator 150 250/
Time code indicator
[f] : Remaining tape indicator

This appears after you set the POWER switch to CAMERA and insert a cassette for a while. 150 250 350 351

This appears after you insert a cassette and record or play back for a while. 118 318 418

[g] :Date indicator

This is displayed for five seconds after the POWER switch is set to CAMERA or MEMORY.*

[h] :Time indicator

This is displayed for five seconds after the POWER switch is set to CAMERA or MEMORY.*

[i] : Hi8 format indicator

This appears while playing back or recording Hi8 format tapes.

[j] : Tape counter indicator

---

* Modes on the POWER switch vary depending on models (p. 16).

Remaining battery time indicator

The remaining battery time indicator indicates the approximate recording time. The indicator may not be correct, depending on the conditions in which you are recording. When you close the LCD panel and open it again, it takes about one minute for the correct remaining battery time in minutes to be displayed.

Time code (for tapes recorded in the Digital8 system only) 150 250 350 351

- When you play back tapes recorded in the Hi8 Hi8/standard 8 mm 8 system, the tape counter appears on the screen. 350 351
- The time code indicates the recording or playback time, "0:00:00" (hours:minutes: seconds) in CAMERA mode and "0:00:00:00" (hours:minutes:seconds:frames) in VCR mode. You cannot rewrite only the time code. You cannot reset the time code or the tape counter.

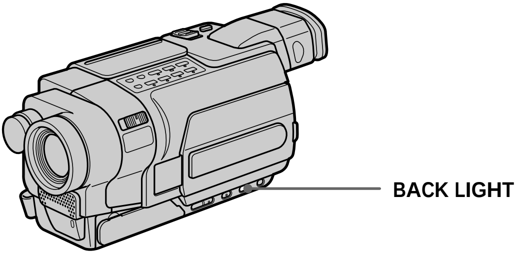
Data code 250 350 351

The data code (date/time or various settings when recorded) are not displayed while recording. However, they are recorded automatically onto tape. To display the data code, press DATA CODE on the Remote Commander during playback (p. 47).

Shooting a backlit subject – BACK LIGHT

When you shoot a subject with the light source behind the subject or a subject with a light background, use the backlight function.

Set the POWER switch to CAMERA or MEMORY, and press BACK LIGHT.*
The ▨ indicator appears on the screen.
To cancel the backlight function, press BACK LIGHT again.



If you press EXPOSURE when shooting backlit subjects
The backlight function will be canceled.

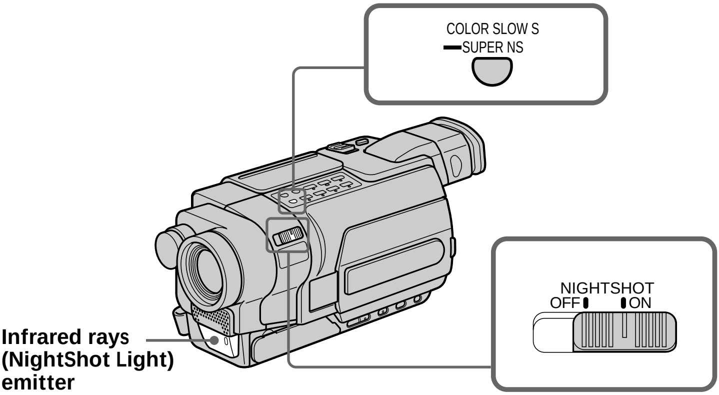
* Modes on the POWER switch vary depending on models (p. 16).

Shooting in the dark – NightShot
– Super NightShot 350 351
– Color Slow Shutter 350 351

The NightShot function enables you to shoot a subject in a dark place. For example, you can satisfactorily record the environment of nocturnal animals for observation when you use this function.

Using NightShot

Set the POWER switch to CAMERA or MEMORY, and slide NIGHTSHOT to ON.*
The ◙ indicator and “NIGHTSHOT” flash on the screen.
To cancel the NightShot function, slide NIGHTSHOT to OFF.



Using the Super NightShot 350 351

The Super NightShot function makes subjects up to 16 times brighter than those recorded in the NightShot mode.

(1) Set the POWER switch to CAMERA, and slide NIGHTSHOT to ON. The ◙ indicator and “NIGHTSHOT” flash on the screen.
(2) Press SUPER NS. The S◙ indicator and “SUPER NIGHTSHOT” flash on the screen.
To cancel the Super NightShot function, press SUPER NS again. Your camcorder returns to the NightShot mode.

Using the NightShot Light

The picture will be clearer with the NightShot Light on. To enable NightShot Light, set N.S.LIGHT to ON in the menu settings. (The default setting is ON.) (p. 213)

---

* Modes on the POWER switch vary depending on models (p. 16).

Using Color Slow Shutter 350 351

The Color Slow Shutter function enables you to record color images in a dark place.

(1) Set the POWER switch to CAMERA, and slide NIGHTSHOT to OFF.
(2) Press COLOR SLOW S.
The indicator and COLOR SLOW SHUTTER flash on the screen.
To cancel the Color Slow Shutter function, press COLOR SLOW S again.

Notes

- Do not use the NightShot function in bright places (e.g. outdoors in the daytime). This may cause your camcorder to malfunction.
- When you keep NIGHTSHOT set to ON in normal recording, the picture may be recorded in incorrect or unnatural colors.
- If focusing is difficult with the autofocus mode when using the NightShot function, focus manually.

While using the NightShot function, you cannot use the following functions:

– Exposure
– PROGRAM AE

While using the Super NightShot or Color Slow Shutter function, you cannot use the following functions 350 351 :

– Fader
– Digital effect
– Exposure
– PROGRAM AE

While using the Super NightShot or Color Slow Shutter function 350 351

The shutter speed is automatically adjusted depending on the brightness. The motion of the picture will be slow.

NightShot Light

NightShot Light rays are infrared and so are invisible. The maximum shooting distance using the NightShot Light is about 3 m (10 feet).
While recording, be sure not to cover the infrared rays emitter with your fingers, etc.

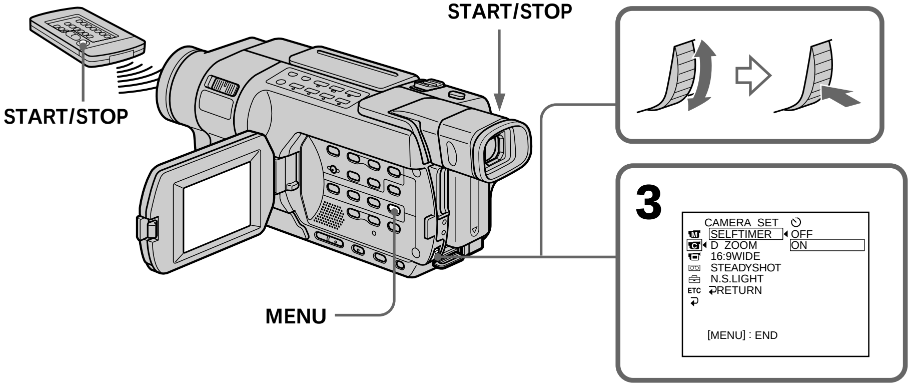
In total darkness 350 351

The Color Slow Shutter function may not work normally.

Self-timer recording 350 351

Recording with the self-timer starts in 10 seconds automatically. You can also use the Remote Commander for this operation.

(1) In the standby mode, press MENU to display the menu settings.
(2) Turn the SEL/PUSH EXEC dial to select SELFTIMER in C, then press the dial.
(3) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
(4) Press MENU to make the menu settings disappear.
The ⏲ (self-timer) indicator appears on the screen.
(5) Press START/STOP.
Self-timer starts counting down from 10 with a beep. In the last two seconds of the countdown, the beep gets faster, then recording starts automatically.



To stop the countdown

Press START/STOP.
To restart the countdown, press START/STOP again.

To cancel self-timer recording

Set SELFTIMER to OFF in the menu settings in the standby mode.
You cannot cancel self-timer using the Remote Commander.

Note

The self-timer is automatically canceled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF (CHG) or VCR.

When the POWER switch is set to MEMORY

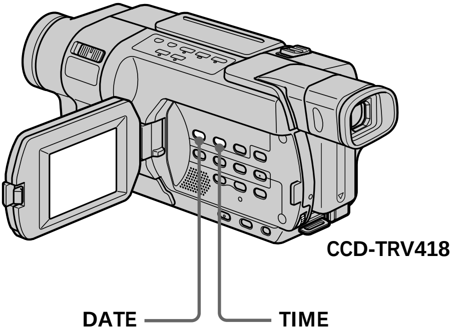
You can also record still images on a "Memory Stick" with the self-timer (p. 135).

Superimposing the date and time on pictures 118 318 418

You can record the date and / or time displayed on the screen superimposed on the picture.
Carry out the following operations in CAMERA mode.

Press DATE to record the date.
Press TIME to record the time.
Press DATE (or TIME), then press TIME (or DATE) to record the date and time.

Press DATE and / or TIME again. The date and / or time indicator disappears.



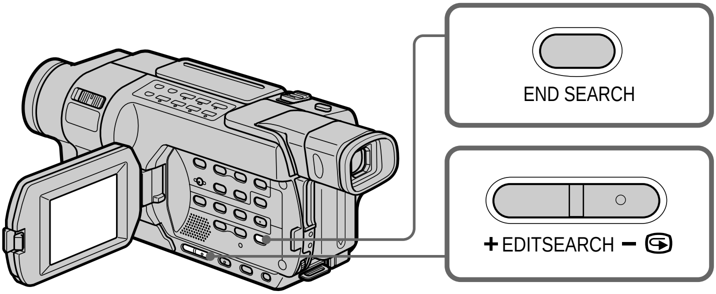
When you purchase your camcorder, the clock is not set up yet. Set the date and time to your local time before using (p. 26).

Note
The date and time indicators recorded manually cannot be deleted.

If you do not record the date and time in the picture
Record the date and time in the black screen as the background for about 10 seconds, then erase the date and time indicators before starting actual recording.

Checking recordings – END SEARCH – EDITSEARCH 350 351 – Rec Review 350 351

You can use these buttons to check the recorded picture for making the transition between the last recorded scene and the next scene you record smooth.



END SEARCH

You can go to the end of the recorded section after you record.

In the standby mode, press END SEARCH.
The last five seconds of the recorded section are played back and your camcorder returns to the standby mode. You can monitor the sound from the speaker.

EDITSEARCH 350 351

You can search for the next recording start point.

In the standby mode, hold down the either side of EDITSEARCH. The recorded portion is played back.
+ : To go forward
– ⊡ : To go backward
Release EDITSEARCH to stop playback. If you press START/STOP, re-recording begins from the point you released EDITSEARCH. You cannot monitor the sound.

Rec Review 350 351

You can check the last recorded section.

In the standby mode, press the – ⊡ side of EDITSEARCH momentarily.
The section you have stopped most recently will be played back for a few seconds, and then your camcorder will return to the standby mode. You can monitor the sound from the speaker.

Notes

- The end search, edit search and Rec Review functions do not work with tapes recorded in the Hi8 Hi8/standard 8 mm 8 system. 350 351
- If you start recording after using the end search function, occasionally, the transition between the last scene you recorded and the next scene may not be smooth.
- Once you eject the cassette after you have recorded on the tape, the end search function does not work.

If a tape has a blank portion between recorded portions

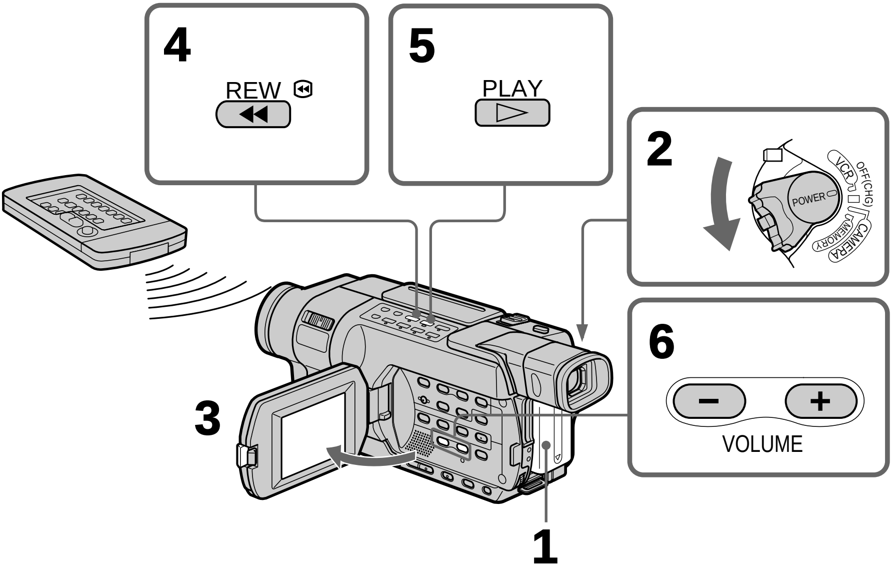
The end search function may not work correctly.

Playing back a tape

You can monitor the playback picture on the LCD screen. If you close the LCD panel, you can monitor the playback picture in the viewfinder.

418 250 350 351
You can control playback using the Remote Commander supplied with your camcorder.

(1) Install the power source and insert the recorded tape.
(2) Set the POWER switch to VCR/PLAYER while pressing the small green button.*
(3) Open the LCD panel while pressing OPEN.
(4) Press ◀◀ to rewind the tape.
(5) Press ▶ to start playback.
(6) To adjust the volume, press either of the two buttons on VOLUME. When you close the LCD panel, sound is muted.
– : To turn the volume down
+ : To turn the volume up



To stop playback

Press ■.

---

* Modes on the POWER switch vary depending on models (p. 16).

If you leave the power on for a long time

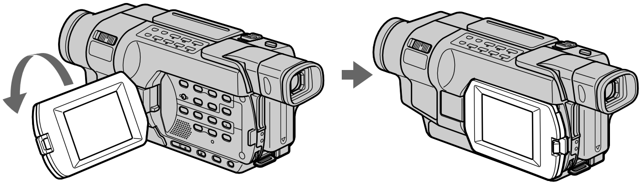
Your camcorder gets warm. This is not a malfunction.

Tapes that can be played back

- Tapes recorded in the Digital8 8 system 150 250 350 351
- Tapes recorded in the Hi8 Hi8/standard 8 mm 8 system

When monitoring on the LCD screen

You can turn the LCD panel over and move it back to the camcorder body with the LCD screen facing out.

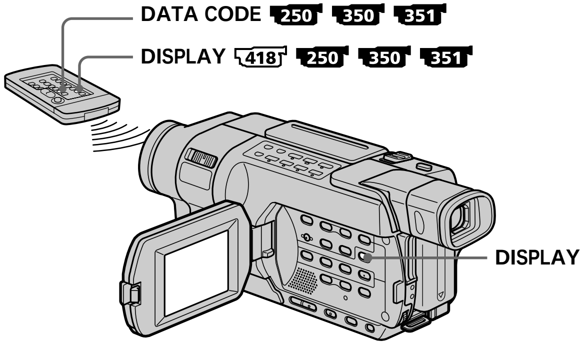


When you open or close the LCD panel

Make sure that the LCD panel is set vertically.

To display the screen indicators – Display function

Press DISPLAY on the Remote Commander. 418 250 350 351
Press DISPLAY on your camcorder.
The indicators appear on the screen.
To make the indicators disappear, press DISPLAY again.


DATA CODE 250 350 351
DISPLAY 418 250 350 351
DISPLAY

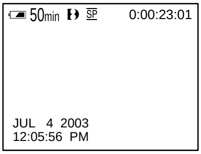
About data code 250 350 351

Use the Remote Commander for this operation.

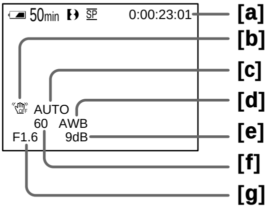
Your camcorder automatically records not only pictures on the tape but also the data code (date/time or various settings when recorded).

① **Set the POWER switch to VCR, then play back a tape.**
② **Press DATA CODE on the Remote Commander.**
The display changes as follows:
date/time → various settings → no indicator

Date/time


50min
SP
0:00:23:01
JUL 4 2003
12:05:56 PM

Various settings


50min
SP
0:00:23:01
AUTO
60 AWB
F1.6 9dB
[a]
[b]
[c]
[d]
[e]
[f]
[g]

[a]: Time code/Tape counter
[b]: SteadyShot off
[c]: Exposure mode
[d]: White balance
[e]: Gain
[f]: Shutter speed
[g]: Aperture value

To not display various settings

Set DATA CODE to DATE in the menu settings (p. 222).
The display changes as follows when you press DATA CODE on the Remote Commander:
date/time ←→ no indicator

Notes on the data code 350 351

- The data code does not work with tapes recorded in the Hi8 Hi8/standard 8 mm 8 system.
- Various settings of the data code are not recorded when recording images on a “Memory Stick.”

Data code (Various settings) 250 350 351

The data code is your camcorder’s information at the time of recording. In the recording mode, the data code will not be displayed.

When you use data code, bars (-- -- --) appear if 250 350 351 :

– A blank portion of the tape is being played back.
– The tape is unreadable due to tape damage or noise.
– The tape was recorded by a camcorder without the date and time set.

Data code 250 350 351

When you connect your camcorder to a TV, the data code appears on the TV screen.

Remaining battery time indicator during playback 150 250 350 351

The indicator indicates the approximate continuous playback time. The indicator may not be correct, depending on the conditions in which you are playing back. When you close the LCD panel and open it again, it takes about one minute for the correct remaining battery time to be displayed.

Various playback modes

To operate the video control buttons, set the POWER switch to VCR/PLAYER.*

To pause playback (viewing a still image)

Press ❚❚ during playback. To resume normal playback, press ❚❚ or ►.

To advance the tape

Press ►► in the stop mode. To resume normal playback, press ►.

To rewind the tape

Press ◄◄ in the stop mode. To resume normal playback, press ►.

To change the playback direction 250 350 351

Press < on the Remote Commander during playback to reverse the playback direction. To resume normal playback, press ►.

To locate a scene monitoring the picture (picture search)

Keep pressing ◄◄ or ►► during playback. To resume normal playback, release the button.

To monitor high-speed pictures while advancing or rewinding the tape (skip scan)

Keep pressing ◄◄ while rewinding or ►► while advancing the tape. To resume rewinding or advancing, release the button.

To view pictures at slow speed (slow playback) 418 250 350 351

Press ❚► on the Remote Commander during playback. To resume normal playback, press ►.

To change the slow playback direction 250 350 351

Press <, then press ❚► on the Remote Commander.

To view pictures at double speed 250 350 351

Press ×2 on the Remote Commander during playback. For double speed playback in the reverse direction, press <, then press ×2 on the Remote Commander. To resume normal playback, press ►.

To view pictures frame-by-frame 250 350 351

Press ❚❚► on the Remote Commander in the playback pause mode. For frame-by-frame playback in the reverse direction, press ◄❚❚. To resume normal playback, press ►.

To search the last scene recorded (END SEARCH)

Press END SEARCH in the stop mode. The last five seconds of the recorded section are played back and playback stops.

* Modes on the POWER switch vary depending on models (p. 16).

In the various playback modes

- The previous recording may appear as a mosaic image when playing back in the Digital8 system. 150 250 350 351
- Noise may appear when your camcorder plays back tapes recorded in the Hi8 Hi8/standard 8 mm 8 system.
- Sound is muted.

When the playback pause mode lasts for a certain period *

Your camcorder automatically stops. To resume playback, press ►.

Note on the slow playback mode in Digital8 system 250 350 351

The slow playback can be performed smoothly on your camcorder, however, this function does not work for an output image from the i DV jack.

If slow playback lasts for about one minute 418

Your camcorder automatically returns to normal speed playback.

When you play back a tape recorded in the LP mode 118 318 418

Noise may appear on the LCD screen in the following cases:

– slow playback 418
– playback pause
– picture search

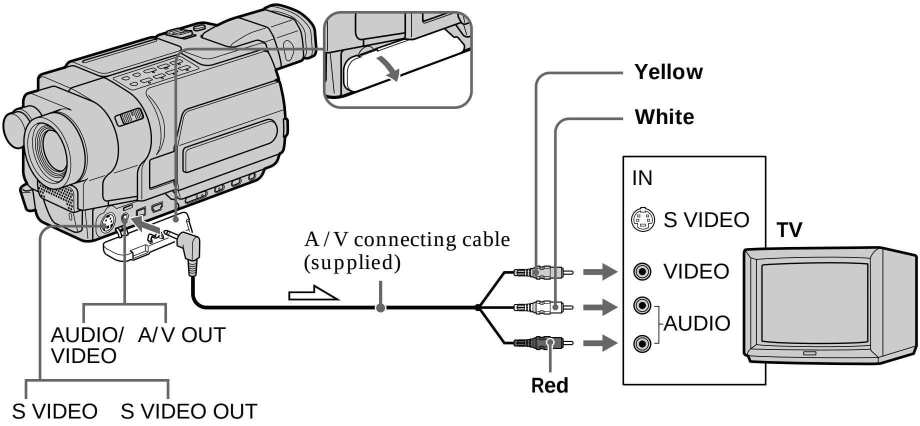
* three minutes: 150 250 350 351
five minutes: 118 318 418

Viewing recordings on TV

Connect your camcorder to your TV with the A/V connecting cable supplied with your camcorder to watch playback pictures on the TV screen. You can operate the video control buttons in the same way as when you monitor playback pictures on the LCD screen. When monitoring playback pictures on the TV screen, we recommend that you power your camcorder from a wall outlet using the AC Adaptor (p. 24). Refer to the operating instructions of your TV.

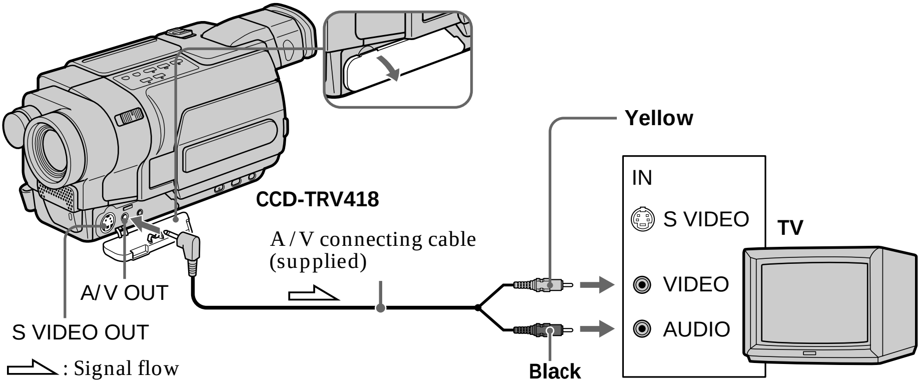
Open the jack cover. Connect your camcorder to the TV using the A/V connecting cable supplied with your camcorder. Then, set the TV/VCR selector on the TV to VCR.

150 **250** **350** **351**


Yellow
White
IN
S VIDEO
VIDEO
AUDIO
TV
A/V connecting cable (supplied)
AUDIO/ VIDEO
A/V OUT
Red
S VIDEO
S VIDEO OUT

⇨ : Signal flow

118 **318** **418**


Yellow
IN
S VIDEO
VIDEO
AUDIO
TV
CCD-TRV418
A/V connecting cable (supplied)
A/V OUT
S VIDEO OUT
Black

⇨ : Signal flow

If your TV is already connected to a VCR

Connect your camcorder to the LINE IN input on the VCR by using the A/V connecting cable supplied with your camcorder. Set the input selector on the VCR to LINE.

If your TV or VCR is a monaural type 150 250 350 351

Connect the yellow plug of the A/V connecting cable to the video input jack and the white or the red plug to the audio input jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and when the red plug is connected, the right channel audio is output.

To connect to a TV without Video/Audio input jacks 118 318 418

Use an NTSC system RFU adaptor (optional).
Refer to the operating instructions of your TV and the RFU adaptor.

If your TV is a stereo type 118 318 418

Connect the audio plug of the A/V connecting cable supplied to the left (white) input jack of your TV.

Note 118 318 418
Noise appears on the TV screen in the various playback modes.

If your TV has an S video jack
Pictures can be reproduced more faithfully by using an S video cable (optional). With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable. Connect the S video cable (optional) to the S video jacks on both your camcorder and the TV.

To display the screen indicators on TV
Set DISPLAY to V-OUT/LCD in the menu settings (p. 222).
Then, press DISPLAY on your camcorder. To turn the screen indicators off, press DISPLAY on your camcorder again.

Recording still images on a "Memory Stick" while recording on a tape

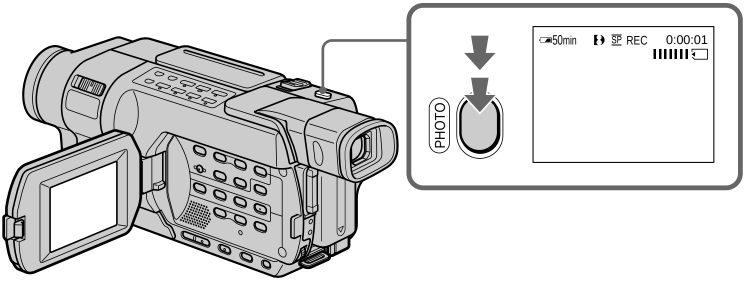
350 **351**

You can record still images on a "Memory Stick" in the tape recording or standby mode.

Before operation

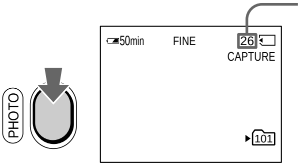
Insert a "Memory Stick" into your camcorder (p. 127).

In the standby mode or during tape recording, press PHOTO deeper.
Recording is complete when the bar scroll indicator disappears.
The still image when you pressed PHOTO deeper will be recorded on the "Memory Stick."



In the standby mode

You can check an image on the screen by pressing PHOTO lightly. The CAPTURE indicator appears. Recording does not start yet. To change the still image, release PHOTO, select a still image again, and then press and hold PHOTO lightly.



Approximate number of images that can be recorded

In the recording mode

You cannot check an image on the screen by pressing PHOTO lightly.

Recording still images on a “Memory Stick” while recording on a tape

“Memory Stick”

For more information, see page 240.

Notes

- Do not shake or strike your camcorder when you record still images. The image may fluctuate.
- You cannot record still images on a “Memory Stick” in the following functions (The 📷⊘ indicator flashes):
  - – Wide mode
  - – BOUNCE
  - – MEMORY MIX
  - – END SEARCH

The following settings cannot be changed

The settings you selected when the POWER switch was set to MEMORY are used:

– Image quality (p. 128)
– Recording folder (p. 162)

To record still images using the Remote Commander

Press PHOTO on the Remote Commander. Your camcorder immediately records the image on the screen.

During and after recording still images on a “Memory Stick”

Your camcorder continues recording on tape.

Title

The title cannot be recorded.

While recording still images on a “Memory Stick” in CAMERA mode

The image is recorded in the FIELD mode automatically even if you select FRAME in the menu settings.

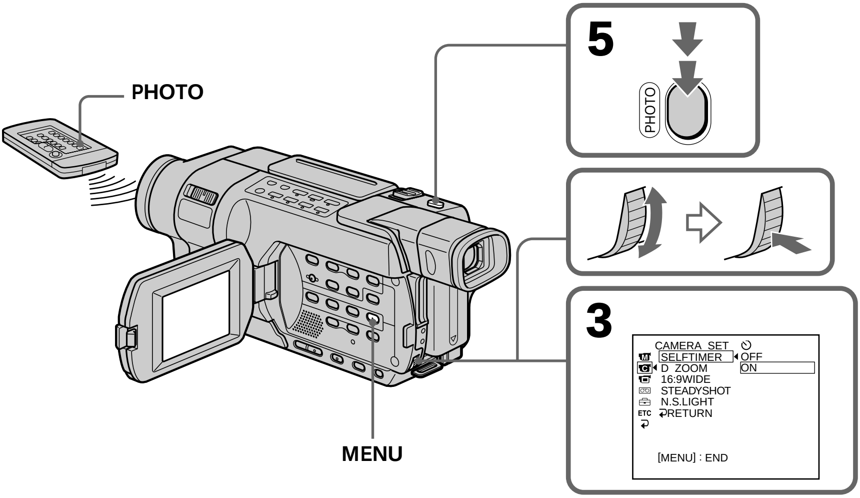
Self-timer recording

You can record still images on a "Memory Stick" with the self-timer. You can also use the Remote Commander for this operation.

Before operation

Insert a "Memory Stick" into your camcorder (p. 127).

(1) In the standby mode, press MENU to display the menu settings.
(2) Turn the SEL / PUSH EXEC dial to select SELFTIMER in 📷, then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(4) Press MENU to make the menu settings disappear.
The ⏲ (self-timer) indicator appears on the screen.
(5) Press PHOTO deeper.
Self-timer starts counting down from 10 with a beep. In the last two seconds of the countdown, the beep gets faster, then recording starts automatically.



To cancel self-timer

Set SELFTIMER to OFF in the menu settings in the standby mode.
You cannot cancel self-timer using the Remote Commander.

Note

The self-timer is automatically canceled when:
– self-timer recording is finished.
– the POWER switch is set to OFF (CHG) or VCR.

Taking photos with the self-timer

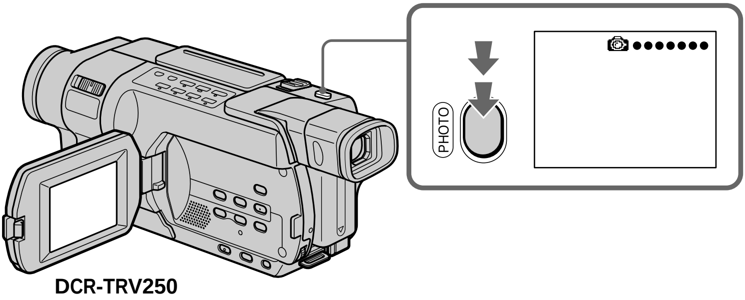
The self-timer can only be operated when in the standby mode.

Recording still images on a tape – Tape Photo recording

150 **250**

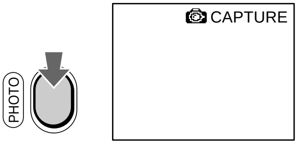
You can record a still image like a photograph.
You can record about 510 images in the SP mode and about 765 images in the LP mode on a tape which can record for 60 minutes in the SP mode.

In the standby mode or during tape recording, press PHOTO deeper.
The still image on the screen is recorded for about seven seconds. The sound during those seven seconds is also recorded.
The still image is displayed on the screen until recording is completed.



In the standby mode

You can check an image on the screen by pressing PHOTO lightly. The CAPTURE indicator appears. Recording does not start yet. To change the still image, release PHOTO, select a still image again, and then press and hold PHOTO lightly.



Notes

- During Tape Photo recording, you cannot change the mode or setting.
- You cannot use PHOTO while using BOUNCE in the Fader function.
- When recording a still image, do not shake your camcorder. The image may fluctuate.
- The tape photo recording does not work while using Fader (The 📷⊘ indicator flashes).

If you record a moving subject with the tape photo recording function

The image may fluctuate when you play back the still image on other equipment. This is not a malfunction.

To use the tape photo recording function using the Remote Commander 250

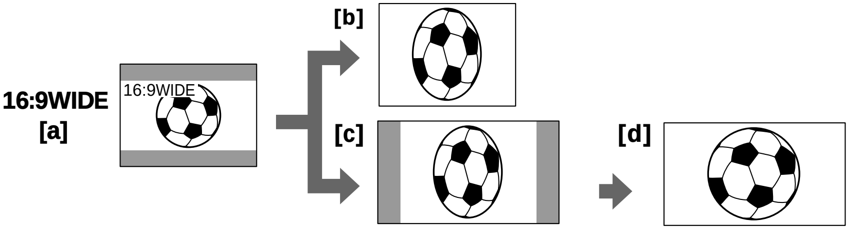
Press PHOTO on the Remote Commander. Your camcorder records an image on the screen immediately.

Using the wide mode

If you connect a TV compatible with the ID-1/ID-2 system, the screen size is automatically selected.

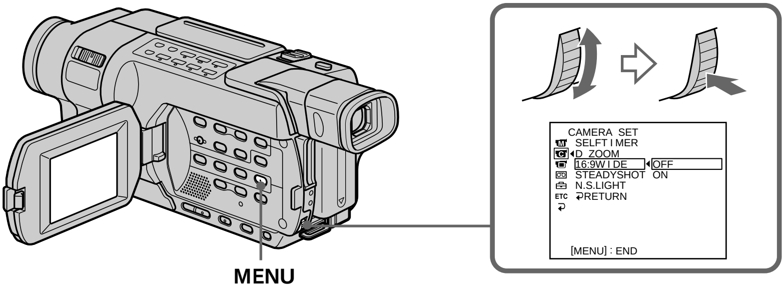
150 250 350 351

You can record a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9WIDE).


16:9WIDE
[a]
16:9WIDE
[b]
[c]
[d]

[a]: Recording in the 16:9WIDE mode
[b]: Playback on a normal TV
[c]: Playback on a wide TV in the normal screen mode
[d]: Full screen mode on a wide TV

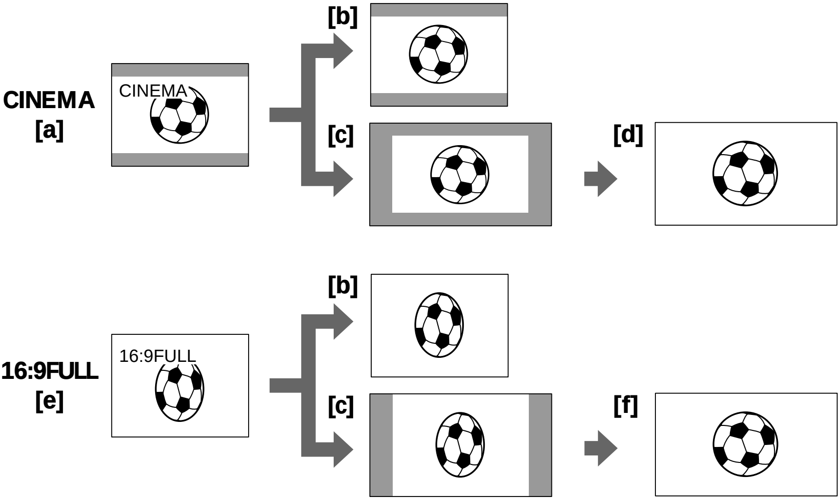
In the standby mode, set 16:9WIDE to ON in C in the menu settings (p. 212).


CAMERA SET
SELFTIMER
D ZOOM
16:9WIDE
OFF
STEADYSHOT
ON
N.S.LIGHT
RETURN
[MENU] : END
MENU

Using the wide mode

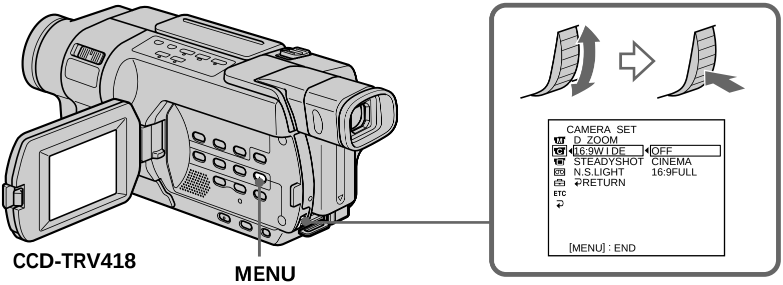
118 318 418

You can record a cinema-like picture (CINEMA) or a 16:9 wide picture (16:9FULL) to watch on the 16:9 wide-screen TV. Refer to the operating instructions of your TV.


CINEMA
[a]
CINEMA
[b]
[c]
[d]
16:9FULL
[e]
16:9FULL
[b]
[c]
[f]

[a]: Recording in the CINEMA mode
[b]: Playback on a normal TV
[c]: Playback on a wide TV in the normal screen mode
[d]: Zoom mode on a wide TV
[e]: Recording in the 16:9FULL mode
[f]: Full mode on a wide TV

In the standby mode, set 16:9WIDE to CINEMA or 16:9FULL in 🅲 in the menu settings (p. 212).


CAMERA SET
D ZOOM
16:9WIDE
STEADYSHOT
N.S.LIGHT
↩RETURN
OFF
CINEMA
16:9FULL
ETC
[MENU] : END
CCD-TRV418
MENU

To cancel the wide mode

In the standby mode, set the wide mode to OFF in the menu settings.

In the wide mode

You cannot operate the following functions:

– OLD MOVIE 350 351 (p. 65)
– Recording still images on a "Memory Stick" in tape recording or tape recording standby 350 351
– BOUNCE (p. 61)

Connection for a TV 150 250 350 351

Pictures recorded in the 16:9WIDE mode automatically appear on the TV screen at full size when:

– You connect your camcorder to a TV that is compatible with the video ID (ID-1/ID-2) system.
– You connect your camcorder to the S video jack on the TV.

ID-1 system

The ID-1 system sends aspect ratio (screen horizontal/vertical ratio) information (16:9, 4:3, or letter box) with video signals.

ID-2 system 150 250 350 351

The ID-2 system sends a copyright protection signal with ID-1 signals inserted between video signals when you connect your camcorder to other equipment by an A/V connecting cable.

In the wide mode

The SteadyShot does not work. If you set the wide mode described below in the menu settings when the SteadyShot is working, the ✋ indicator flashes and the SteadyShot does not function:

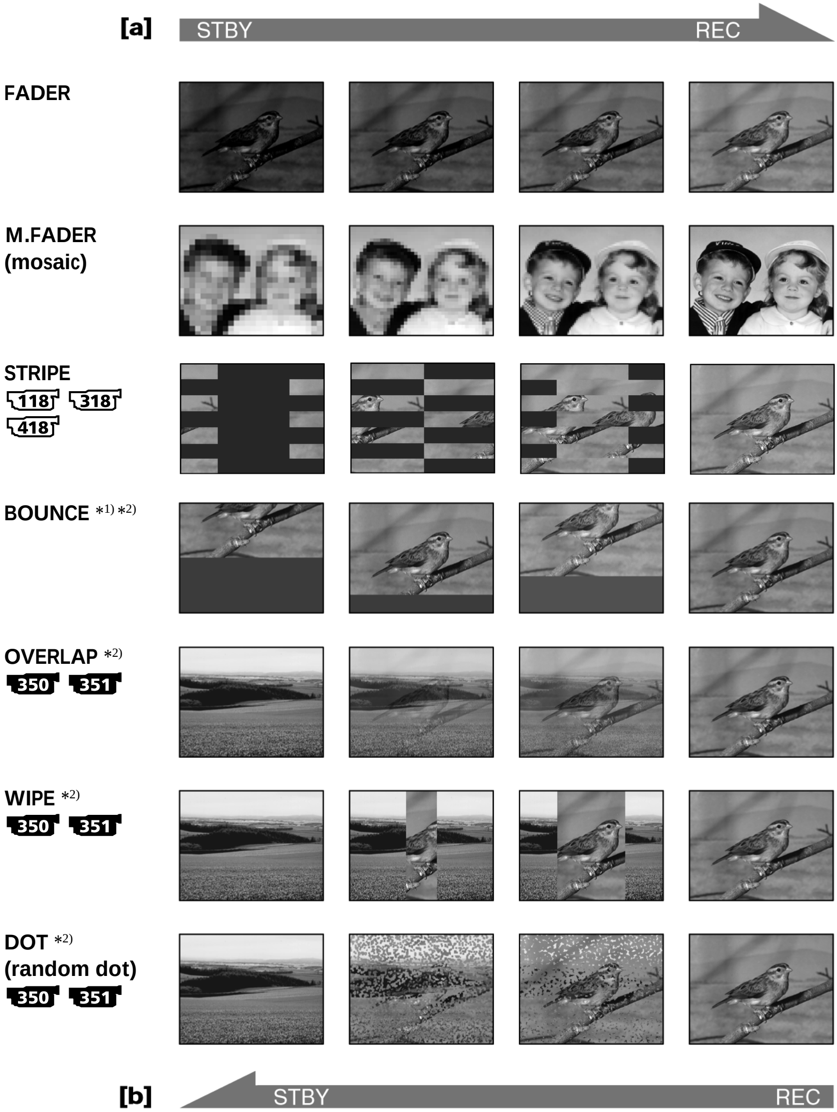
– 16:9WIDE to ON 150 250 350 351
– 16:9WIDE to 16:9FULL 318 418

Date or time indicator 118 318 418

When you record in the 16:9FULL mode, the date or time indicator will be widened on wide-screen TVs.

Using the fader function

You can fade in or out to give your recording a professional appearance.


[a]
STBY
REC
FADER
M.FADER
(mosaic)
STRIPE
118 318
418
BOUNCE *1) *2)
OVERLAP *2)
350 351
WIPE *2)
350 351
DOT *2)
(random dot)
350 351
[b]
STBY
REC

MONOTONE
When fading in, the picture gradually changes from black-and-white to color.
When fading out, the picture gradually changes from color to black-and-white.

*1) You can use BOUNCE when D ZOOM is set to OFF in the menu setting.
*2) Fade in only

(1) To fade in [a]

In the standby mode, press FADER until the desired fader indicator flashes.

To fade out [b]

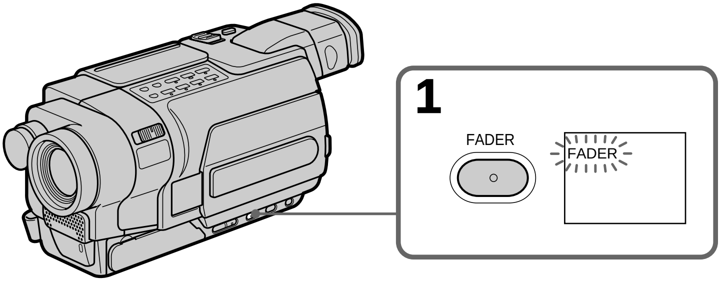
In the recording mode, press FADER until the desired fader indicator flashes.

The indicator changes as follows:

→ FADER → M.FADER → STRIPE → BOUNCE → MONOTONE
no indicator ← DOT ← WIPE ← OVERLAP ←

The last selected fader mode is indicated first of all.

(2) Press START/STOP. The fader indicator stops flashing.
After fade in/out ends, your camcorder automatically returns to the normal mode.



To cancel the fader function

Before pressing START/STOP, press FADER repeatedly until the indicator disappears.

Notes 150 250 350 351

- The OVERLAP, WIPE and DOT functions do not work with tapes recorded in the Hi8 Hi8/standard 8 mm 8 system. 350 351
- You cannot use the following functions while using the fader function. Also, you cannot use the fader function while using the following functions:
  - – Digital effect 350 351
  - – Color Slow Shutter 350 351
  - – Super NightShot 350 351
  - – Tape Photo recording 150 250
  - – Interval recording
  - – Frame recording

When you set the POWER switch to MEMORY 350 351

You cannot use the fader function.

When you select OVERLAP, WIPE, or DOT 350 351

Your camcorder automatically stores the picture recorded on the tape. While the picture is being stored, the indicator flashes fast, and the picture from the tape appears on the screen. At this stage, the picture may not be recorded clearly, depending on the tape condition.

The date, time indicator 118 318 418 and title do not fade in or fade out

Erase them before operating the fader function if they are not needed.

While using the bounce mode, you cannot use the following functions:

– Recording on a “Memory Stick” 350 351
– Exposure 150 250 350 351
– Focus
– Zoom
– Picture effect
– PROGRAM AE
– BACK LIGHT

Note on the bounce mode

The BOUNCE indicator does not appear in the following functions:
– When D ZOOM is set to 40× or 700×. 250 350 351
– When D ZOOM is set to 40× or 560×. 118 318 418 150
– Wide mode
– Picture effect
– PROGRAM AE

Using special effects – Picture effect

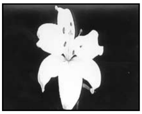
You can digitally process pictures to obtain special effects like those in films or on TV.

NEG. ART [a] : The color and brightness of the picture are reversed.
SEPIA : The picture appears in sepia.
B&W : The picture appears in monochrome (black-and-white).
SOLARIZE [b] : The picture appears as an illustration with strong contrast.
SLIM [c] : The picture expands vertically.
STRETCH [d] : The picture expands horizontally.
PASTEL [e] : The picture appears as a pale pastel drawing.
MOSAIC [f] : The picture appears mosaic.

[a]

[b]

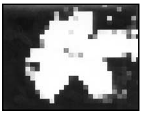
[c]



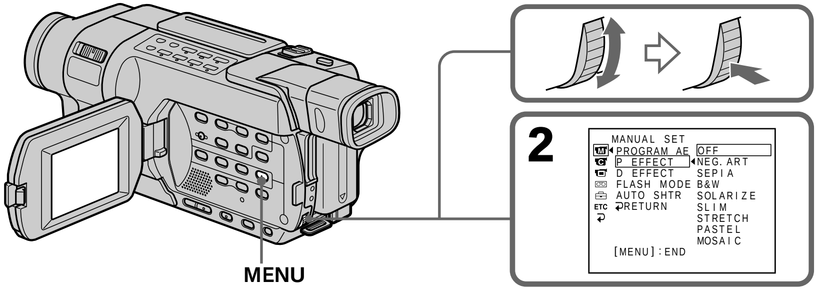
[d]

[e]

[f]



(1) In CAMERA mode, press MENU to display the menu settings.
(2) Turn the SEL / PUSH EXEC dial to select P EFFECT in M, then press the dial (p. 211).
(3) Turn the SEL / PUSH EXEC dial to select the desired picture effect mode, then press the dial.


2
MANUAL SET
PROGRAM AE
P EFFECT
D EFFECT
FLASH MODE
AUTO SHTR
ETC
RETURN
OFF
NEG. ART
SEPIA
B&W
SOLARIZE
SLIM
STRETCH
PASTEL
MOSAIC
[MENU] : END
MENU

To cancel Picture effect

Set P EFFECT to OFF in the menu settings.

While using Picture effect 350 351

You cannot select OLD MOVIE with Digital effect.

When you set the POWER switch to OFF (CHG)

Picture effect is automatically canceled.

Using special effects – Digital effect

350 351

You can add special effects to recorded images using the various digital functions. The sound is recorded normally.

STILL
You can record a still image so that it is superimposed on a moving picture.

FLASH (FLASH MOTION)
You can record still images successively at regular intervals.

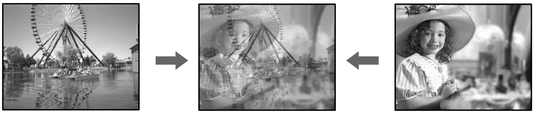
LUMI. (LUMINANCE KEY)
You can swap the brighter area in a still image with a moving picture.

TRAIL
You can record a picture so that an incidental image like a trail is left.

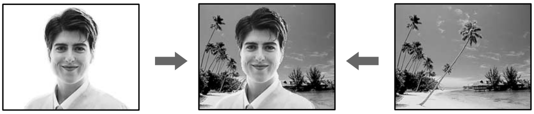
SLOW SHTR (SLOW SHUTTER)
You can slow down the shutter speed. The slow shutter mode is good for recording dark pictures more brightly.

OLD MOVIE
You can add an old movie type atmosphere to pictures. Your camcorder automatically changes the screen format to wide and the color to sepia and set the appropriate shutter speed.

STILL



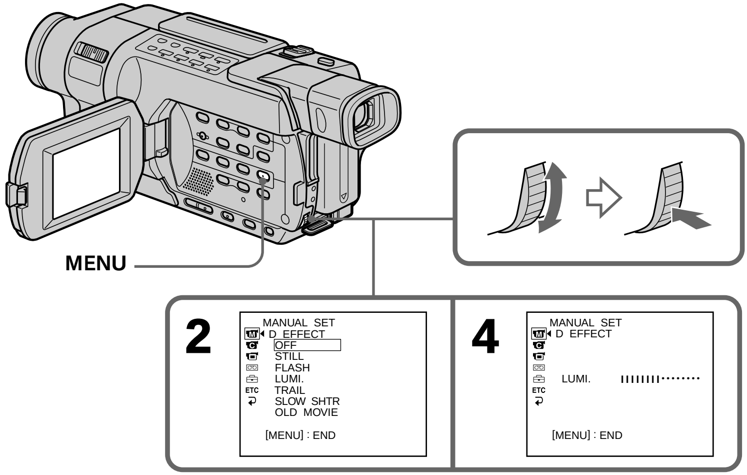
LUMI.



(1) In CAMERA mode, press MENU to display the menu settings.
(2) Turn the SEL / PUSH EXEC dial to select D EFFECT in M, then press the dial (p. 211).
(3) Turn the SEL / PUSH EXEC dial to select the desired digital effect mode.
(4) Press the SEL / PUSH EXEC dial. The bars appear on the screen. In the STILL and LUMI. modes, the still image is stored in memory.
(5) Turn the SEL / PUSH EXEC dial to adjust the effect, then press the dial.

Effect	Items to be adjusted
STILL	The degree of still image you want to superimpose on the moving picture.
FLASH	The interval of flash motion.
LUMI.	The brightness of the area in the still image which is to be swapped with a moving picture.
TRAIL	The vanishing time of the incidental picture.
SLOW SHTR	Shutter speed. The larger the shutter speed number, the slower the shutter speed becomes.
OLD MOVIE	No adjustment necessary.

The more bars there are on the screen, the stronger the effect. The bars appear in the following modes: STILL, FLASH, LUMI. and TRAIL.



To cancel Digital effect

Set D EFFECT to OFF in the menu settings.

Notes

- The following functions do not work during digital effects:
  - Fader
  - Super NightShot
  - Color Slow Shutter
- The PROGRAM AE function does not work in the slow shutter mode.
- The following functions do not work in the OLD MOVIE mode:
  - Wide mode
  - Picture effect
  - PROGRAM AE

When you set the POWER switch to OFF (CHG)

Digital effect is automatically canceled.

When recording in the slow shutter mode

Auto focus may not be effective. Focus manually using a tripod.

Shutter speed

Shutter speed number	Shutter speed
SLOW SHTR 1	1/30
SLOW SHTR 2	1/15
SLOW SHTR 3	1/8
SLOW SHTR 4	1/4

Using the PROGRAM AE function

You can select the PROGRAM AE (Auto Exposure) mode to suit your specific shooting requirements.

(SPOTLIGHT)
This mode prevents people's faces, for example, from appearing excessively white when shooting subjects lit by strong light in the theater.

(PORTRAIT)
This mode brings out the subject while creating a soft background for subjects such as people or flowers.

(SPORTS)
This mode minimizes camera shake on fast-moving subjects such as in tennis or golf.

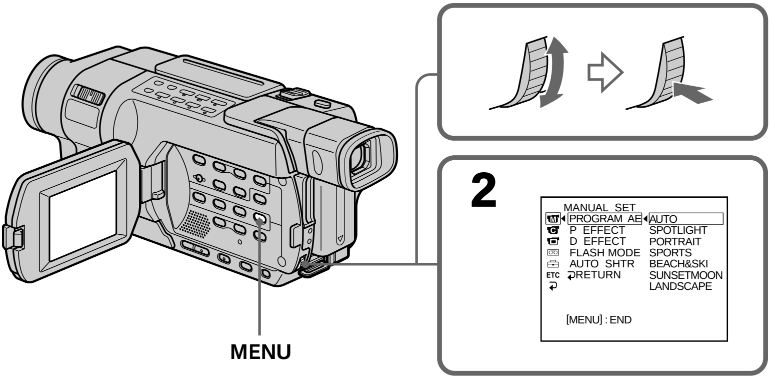
(BEACH & SKI)
This mode prevents people's faces from appearing dark in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

(SUNSETMOON)
This mode allows you to maintain atmosphere when you are recording sunsets, general night views, fireworks displays and neon signs.

(LANDSCAPE)
This mode is for when you record distant subjects such as mountains and prevents your camcorder from focusing on glass or metal mesh in windows when you record a subject behind glass or a screen.

Using the PROGRAM AE function

(1) In CAMERA or MEMORY mode, press MENU to display the menu settings.*
(2) Turn the SEL/PUSH EXEC dial to select PROGRAM AE in 🅼, then press the dial (p. 211).
(3) Turn the SEL/PUSH EXEC dial to select the desired mode, then press the dial.


2
MANUAL SET
PROGRAM AE
P EFFECT
D EFFECT
FLASH MODE
AUTO SHTR
RETURN
AUTO
SPOTLIGHT
PORTRAIT
SPORTS
BEACH&SKI
SUNSETMOON
LANDSCAPE
[MENU] : END
MENU

To cancel the PROGRAM AE function

Set PROGRAM AE to AUTO in the menu settings.

Notes

- In the SPOTLIGHT, SPORTS and BEACH & SKI modes, you cannot take close-ups. This is because your camcorder is set to focus only on subjects in the middle to far distance.
- In the SUNSETMOON and LANDSCAPE modes, your camcorder is set to focus only on distant subjects.
- The following functions do not work in the PROGRAM AE function:
  - Color Slow Shutter **350** **351**
  - SLOW SHUTTER **350** **351**
  - OLD MOVIE **350** **351**
  - BOUNCE
- PROGRAM AE function does not work in the following cases (The indicator flashes):
  - When using MEMORY MIX on a “Memory Stick.” **350** **351**
  - When NIGHTSHOT is set to ON.

If you are recording under a discharge tube such as a fluorescent lamp, sodium lamp or mercury lamp

Flickering or changes in color may occur in the following modes. If this happens, turn the PROGRAM AE function off:
– PORTRAIT
– SPORTS

Even if the PROGRAM AE function is selected

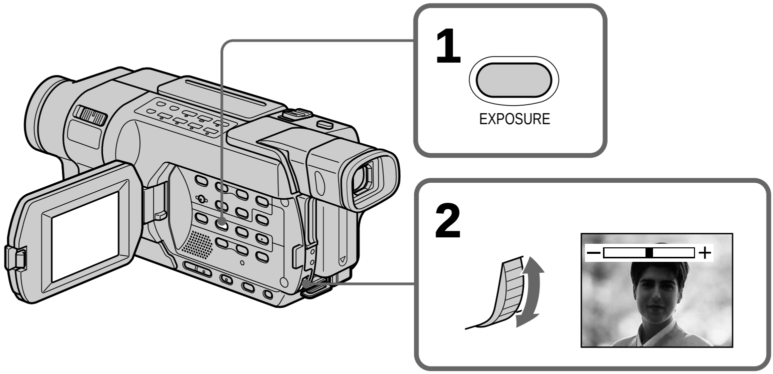
You can adjust the exposure.

* Modes on the POWER switch vary depending on models (p. 16).

Adjusting the exposure manually

You can manually adjust and set the exposure. Normally, exposure is automatically adjusted.
Adjust the exposure manually in the following cases:
– When the subject is backlit.
– When shooting bright subjects against dark backgrounds.
– When recording dark pictures (e.g. night scenes) faithfully.

(1) In CAMERA or MEMORY mode, press EXPOSURE.* The exposure indicator appears on the screen.
(2) Turn the SEL / PUSH EXEC dial to adjust the brightness.



To return to the automatic exposure mode

Press EXPOSURE.

Note

When you adjust the exposure manually, the following functions do not work:
– Color Slow Shutter **350** **351**
– BACK LIGHT

Your camcorder automatically returns to the automatic exposure mode:
– If you change the PROGRAM AE mode.
– If you slide NIGHTSHOT to ON.

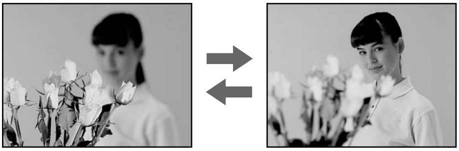
* Modes on the POWER switch vary depending on models (p. 16).

Focusing manually

You can gain better results by manually adjusting the focus in the following cases:

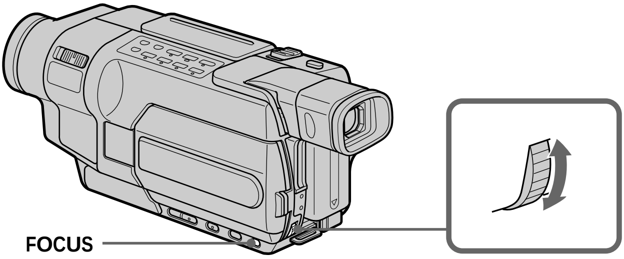
- The autofocus mode is not effective when shooting:
  - Subjects through glass covered with water droplets.
  - Horizontal stripes.
  - Subjects with little contrast with backgrounds such as walls or the sky.
- When you want to change the focus from a subject in the foreground to a subject in the background.
- Shooting a stationary subject when using a tripod.

Normally, focus is automatically adjusted.



(1) In CAMERA or MEMORY mode, press FOCUS.* The F indicator appears on the screen.

(2) Turn the SEL / PUSH EXEC dial to sharpen focus.



To return to the autofocus mode

Press FOCUS.

To focus precisely

It is easier to focus on subjects if you adjust the zoom to shoot at the “W” (wide-angle) after focusing at the “T” (telephoto) position.

When you shoot close to the subject

Focus at the end of the “W” (wide-angle) position.

The F indicator changes to the following indicators:

▲ when recording a distant subject.

👤 when the subject is too close to focus on.

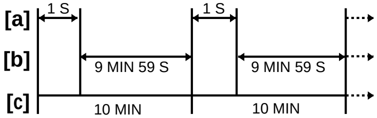
* Modes on the POWER switch vary depending on models (p. 16).

Interval recording

150 **250** **350** **351**

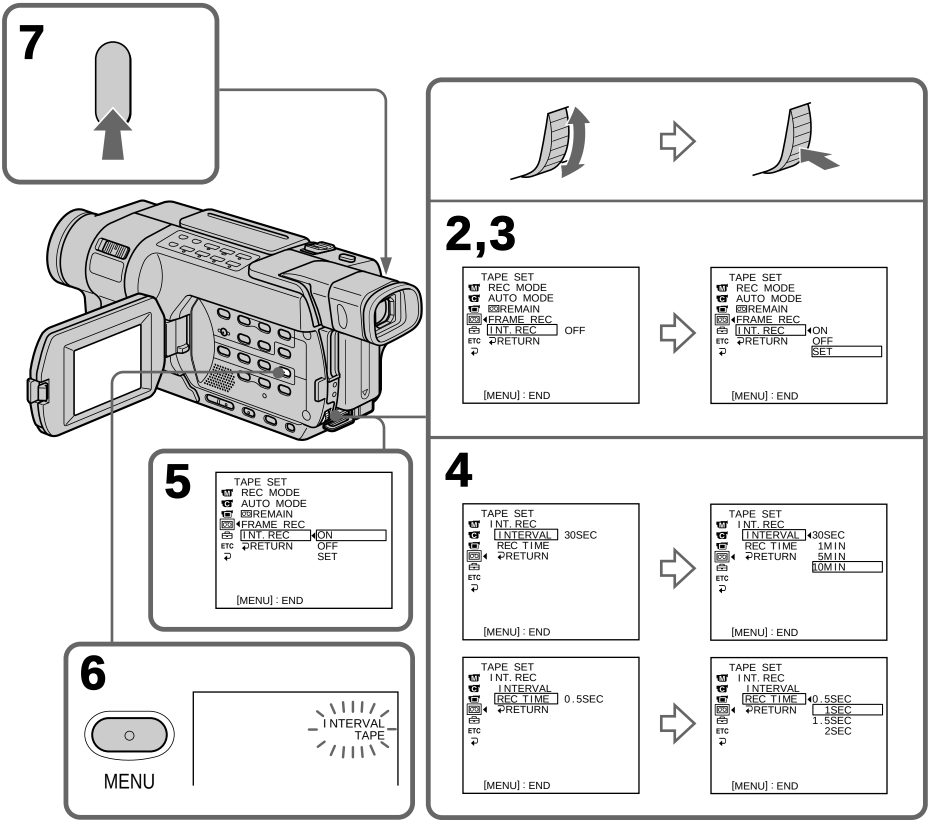
You can make a time-lapse recording by setting your camcorder to automatically record and standby sequentially. You can achieve an excellent recording for flowering, gradual appearances, etc., with this function.

Example



[a]: Recording time (REC TIME)
[b]: Waiting time
[c]: Interval time (INTERVAL)

(1) In the standby mode, press MENU to display the menu settings.
(2) Turn the SEL / PUSH EXEC dial to select INT. REC in ▣, then press the dial (p. 219).
(3) Turn the SEL / PUSH EXEC dial to select SET, then press the dial.
(4) Set INTERVAL and REC TIME.
  ① Turn the SEL / PUSH EXEC dial to select INTERVAL, then press the dial.
  ② Turn the SEL / PUSH EXEC dial to select the desired interval time, then press the dial.
  The time: 30SEC ←→ 1MIN ←→ 5MIN ←→ 10MIN
  ③ Turn the SEL / PUSH EXEC dial to select REC TIME, then press the dial.
  ④ Turn the SEL / PUSH EXEC dial to select the desired recording time, then press the dial.
  The time: 0.5SEC ←→ 1SEC ←→ 1.5SEC ←→ 2SEC
  ⑤ Turn the SEL / PUSH EXEC dial to select ↩ RETURN, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(6) Press MENU to make the menu settings disappear. The INTERVAL TAPE indicator flashes.
(7) Press START / STOP to start interval recording. The INTERVAL TAPE indicator lights up.


7
2,3
TAPE SET
REC MODE
AUTO MODE
REMAIN
FRAME REC
INT. REC OFF
RETURN
[MENU] : END
TAPE SET
REC MODE
AUTO MODE
REMAIN
FRAME REC
INT. REC ON
OFF
SET
RETURN
[MENU] : END
4
TAPE SET
INT. REC
INTERVAL 30SEC
REC TIME
RETURN
[MENU] : END
TAPE SET
INT. REC
INTERVAL 30SEC
1MIN
5MIN
10MIN
REC TIME
RETURN
[MENU] : END
TAPE SET
INT. REC
INTERVAL
REC TIME 0.5SEC
RETURN
[MENU] : END
TAPE SET
INT. REC
INTERVAL
REC TIME 0.5SEC
1SEC
1.5SEC
2SEC
RETURN
[MENU] : END
5
TAPE SET
REC MODE
AUTO MODE
REMAIN
FRAME REC
INT. REC ON
OFF
SET
RETURN
[MENU] : END
6
MENU
INTERVAL
TAPE

To cancel interval recording

Perform either of the following:
– Set INT. REC to OFF in the menu settings.
– Set the POWER switch to the position other than CAMERA.

To perform normal recording during interval recording

You can perform normal recording only once during interval.
Press START/STOP. The INTERVAL TAPE indicator flashes, and normal recording starts. To stop normal recording, press START/STOP again and the screen in step **(6)** appears.

On recording time

There may be a discrepancy in the recording time of up to +/– six frames from the selected time.

Frame by frame recording – Frame recording

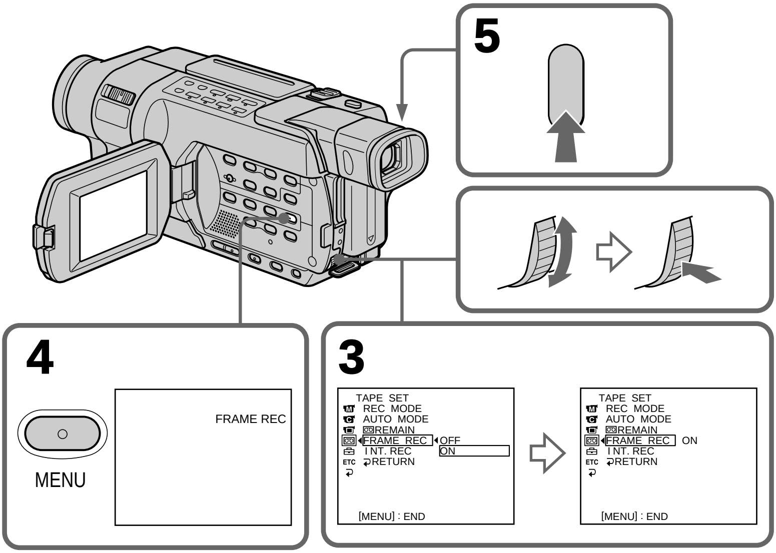
150 250 350 351

You can make a recording with a stop-motion animated effect using frame recording. To create this effect, alternately move the subject a little and make a frame recording.

250 350 351

We recommend that you use a tripod, and operate your camcorder using the Remote Commander after step **(5)**.

(1) In the standby mode, press MENU to display the menu settings.
(2) Turn the SEL/PUSH EXEC dial to select FRAME REC in 📼, then press the dial (p. 219).
(3) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
(4) Press MENU to make the menu settings disappear.
The FRAME REC indicator appears.
(5) Press START/STOP to start frame recording. Your camcorder makes a recording for about six frames, and returns to recording standby.
(6) Move the subject, and repeat step **(5)**.


5
4
MENU
FRAME REC
3
TAPE SET
REC MODE
AUTO MODE
REMAIN
FRAME REC
OFF
ON
INT. REC
RETURN
[MENU] : END
TAPE SET
REC MODE
AUTO MODE
REMAIN
FRAME REC
ON
INT. REC
RETURN
[MENU] : END

To cancel the frame recording

Perform either of the following:
– Set FRAME REC to OFF in the menu settings.
– Set the POWER switch to the position other than CAMERA.

Note

The remaining tape time is not indicated correctly if you use this function continuously.

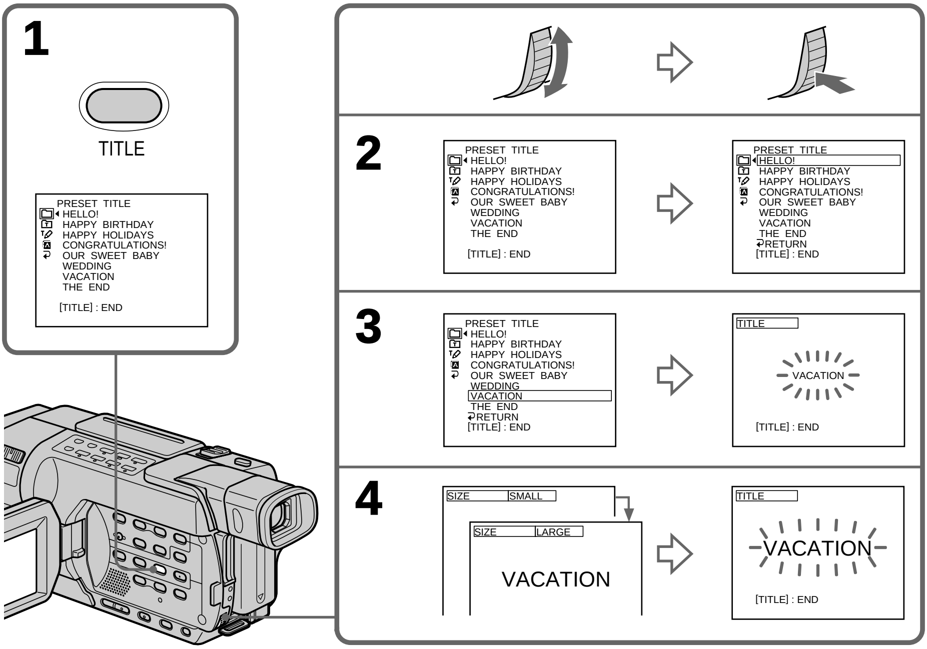
When using the frame recording function

The last recorded cut is longer than other cuts.

Superimposing a title

You can select one of the eight preset titles and the two custom titles (p. 77). You can also select the language, color, size and position of titles.

(1) In the standby mode, press TITLE to display the title menu. The title menu display appears on the screen.
(2) Turn the SEL/PUSH EXEC dial to select 🗀, then press the dial.
(3) Turn the SEL/PUSH EXEC dial to select the desired title, then press the dial. The titles are displayed in the language you selected.
(4) Change the color, size, or position, if necessary.
  ① Turn the SEL/PUSH EXEC dial to select COLOR, SIZE, or POSITION, then press the dial. The selected item appears on the screen.
  ② Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial.
  ③ Repeat steps ① and ② until the title is laid out as desired.
(5) Press the SEL/PUSH EXEC dial again to complete the setting.
(6) Press START/STOP to start recording.
(7) When you want to stop recording the title, press TITLE.


1
TITLE
PRESET TITLE
HELLO!
HAPPY BIRTHDAY
HAPPY HOLIDAYS
CONGRATULATIONS!
OUR SWEET BABY
WEDDING
VACATION
THE END
[TITLE] : END
2
RETURN
3
TITLE
VACATION
4
SIZE SMALL
SIZE LARGE
VACATION

To superimpose the title while you are recording

Press TITLE while you are recording, and carry out steps **(2)** to **(5)**. When you press the SEL / PUSH EXEC dial at step **(5)**, the title is recorded.

To select the language of a preset title

If you want to change the language, select 🅰 before step **(2)**. Then select the desired language and return to step **(2)**.

Note 118 318 418

The date and time, or either of them, may not be displayed depending on the size or position of the title.

If you display the menu while superimposing a title

The title is not recorded while the menu is displayed.

To use a custom title

If you want to use a custom title, select 🅃 in step **(2)**.

Title setting

- The title color changes as follows:
  WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE
- The title size changes as follows:
  SMALL ←→ LARGE
  You cannot input 13 characters or more in LARGE size. If you input more than 12 characters, the title size returns to SMALL even if you select LARGE.
- The title position changes as follows:
  1 ←→ 2 ←→ 3 ←→ 4 ←→ 5 ←→ 6 ←→ 7 ←→ 8 ←→ 9
  The larger the position number, the lower the title is positioned.
  When you select the title size "LARGE," you cannot choose position 9.

  118 318 418

  In CINEMA mode, you cannot choose position 9 for "SMALL" size titles, and position 8 or 9 for "LARGE" size titles.

When you are selecting and setting the title

You cannot record the title displayed on the screen.

When you superimpose a title while you are recording

The beep does not sound.

While you are playing back

You can superimpose a title. However, the title is not recorded on the tape.
You can record a title when you dub a tape by connecting your camcorder to a VCR with the A / V connecting cable.

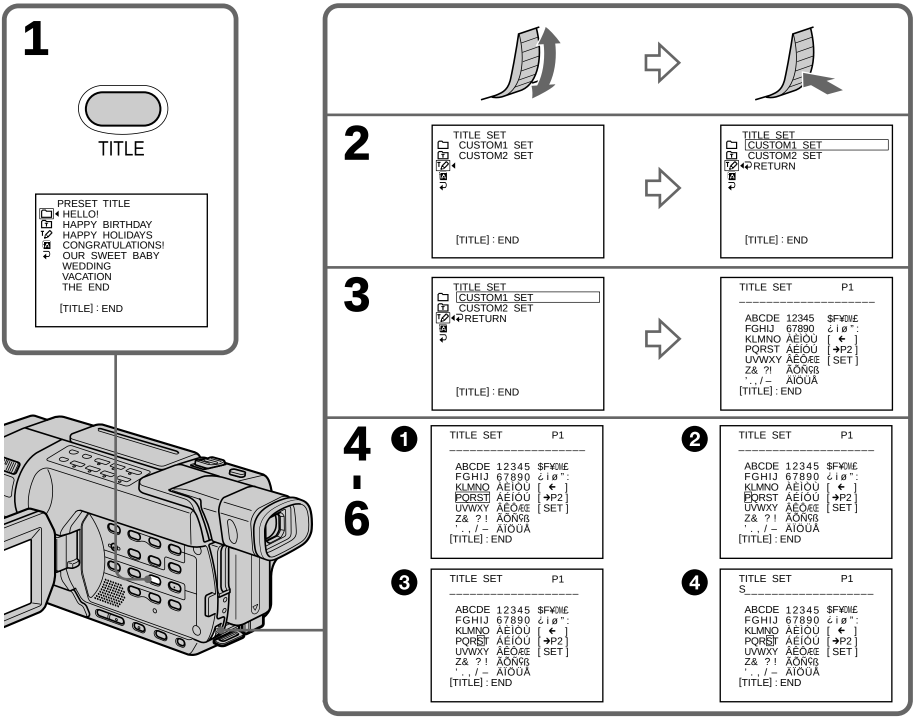
150 250 350 351

If you use the i.LINK cable instead of the A / V connecting cable, you cannot record the title.

Making your own titles

You can make up to two titles and store them in your camcorder. Each title can have up to 20 characters.

(1) In CAMERA or VCR/PLAYER mode, press TITLE.*
(2) Turn the SEL/PUSH EXEC dial to select ✎, then press the dial.
(3) Turn the SEL/PUSH EXEC dial to select CUSTOM1 SET or CUSTOM2 SET, then press the dial.
(4) Turn the SEL/PUSH EXEC dial to select the column of the desired character, then press the dial.
(5) Turn the SEL/PUSH EXEC dial to select the desired character, then press the dial.
(6) Repeat steps **(4)** and **(5)** until you have selected all characters and completed the title.
(7) To finish making your own titles, turn the SEL/PUSH EXEC dial to select SET, then press the dial. The title is stored in memory.
(8) Press TITLE to make the title menu disappear.


1
TITLE
PRESET TITLE
HELLO!
HAPPY BIRTHDAY
HAPPY HOLIDAYS
CONGRATULATIONS!
OUR SWEET BABY
WEDDING
VACATION
THE END
[TITLE] : END
2
TITLE SET
CUSTOM1 SET
CUSTOM2 SET
RETURN
[TITLE] : END
3
TITLE SET P1
ABCDE 12345 $F¥DM£
FGHIJ 67890 ¿ i ø " :
KLMNO ÀÈÌÒÙ [←]
PQRST ÁÉÍÓÚ [→P2]
UVWXY ÂÊÔÆŒ [SET]
Z& ?! ÃÕÑÇß
' . , / – ÄÏÖÜÅ
4
6
❶
❷
❸
❹
S

* Modes on the POWER switch vary depending on models (p. 16).

To change a title you have stored

In step **(3)**, select CUSTOM1 SET or CUSTOM2 SET, depending on which title you want to change, then press the SEL/PUSH EXEC dial.
Turn the SEL/PUSH EXEC dial to select [←], then press the dial to delete the title. The last character is erased. Enter the new title as desired.

If it takes a certain period *1) or longer to enter characters in the standby mode while a cassette is in your camcorder

The power automatically goes off. The characters you have entered remain stored in memory. Set the POWER switch to OFF (CHG) once, and turn it to CAMERA again, then start from step **(1)**.
We recommend setting the POWER switch to VCR/PLAYER or removing the cassette so that your camcorder is not automatically turned off while you are entering title characters.*2)

To erase a character

Select [←]. The last character is erased.

To enter a space

Select [Z& ?!], then select the blank part between & and ?.

If you select [→P2]

The menu for selecting alphabet and Russian characters appears. Select [→P1] to return to the previous screen.

*1) three minutes: 150 250 350 351
five minutes: 118 318 418
*2) Modes on the POWER switch vary depending on models (p. 16).

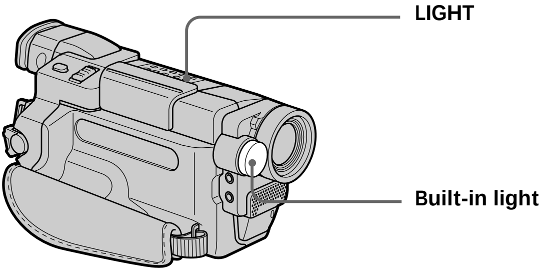
Using the built-in light

You can use the built-in light to suit your shooting situation. The recommended distance between the subject and camcorder is about 1.5 m (5 feet).

In CAMERA or MEMORY mode, press LIGHT repeatedly until the ON indicator appears on the screen.*
The indicator changes as follows:

→ AUTO → ON → no indicator

The built-in light turns on.
If you turn the POWER switch to OFF (CHG), the built-in light turns off simultaneously. You cannot turn the built-in light on by turning the POWER switch to CAMERA or MEMORY again.* To turn on the built-in light again, press LIGHT again in CAMERA or MEMORY mode.*



To turn off the built-in light

Press LIGHT repeatedly until no indicator appears on the screen.

To turn on the built-in light automatically

Press LIGHT repeatedly until the AUTO indicator appears on the screen.
The built-in light automatically turns on and off according to the ambient brightness.

CAUTION

Be careful not to touch the lighting section, because the plastic window and surrounding surfaces are hot while the light is on. It remains hot for a while after the light is turned off.

DANGER

Not to be handled by children.
Emits intense heat and light.
Use with caution to reduce the risk of fire or injury to persons.
Do not directly aim the light at persons or materials from less than 1.22 m (4 feet) away during use and until the light becomes cool.
Turn the built-in light off when not in use.

---

* Modes on the POWER switch vary depending on models (p. 16).

Notes

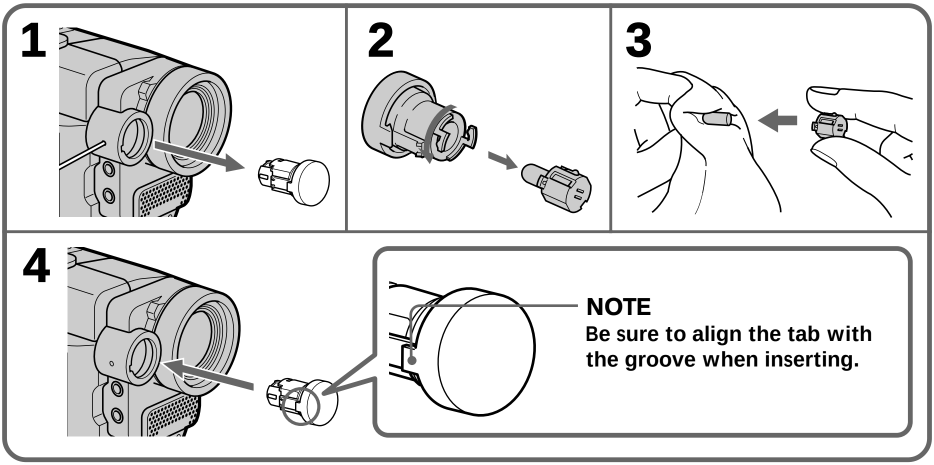
- The built-in light turns off automatically in the following cases:
  - When you leave it on for more than five minutes with the POWER switch set to MEMORY. 350 351
  - When it stays on in the AUTO mode (AUTO) for more than five minutes.
  - When you leave it on for more than five minutes with no cassette inserted or after the tape has run out.

  To turn the built-in light on again, press LIGHT again.
- The battery pack discharges quickly while the built-in light is turned on. Turn it off when not in use.
- When you do not use your camcorder, turn the built-in light off and remove the battery pack to avoid turning on the built-in light accidentally.
- When flickering occurs while shooting in the AUTO mode (AUTO), press LIGHT until the ON indicator appears.
- The built-in light may turn on / off when you use the PROGRAM AE or backlight function while shooting in the AUTO mode (AUTO).
- The built-in light may turn off when inserting or ejecting a cassette.
- The built-in light is turned off in the following cases:
  - While the end search function is working
  - Interval time of Interval recording
- When you use the conversion lens (optional), light from the built-in light is blocked and may not illuminate the subject properly.

Replacing the bulb

Use the Sony XB-3D halogen lamp (optional). The supplied halogen lamp is not commercially available. Purchase the Sony XB-3D halogen lamp.
Remove the power source before replacing the bulb.

(1) Remove the built-in light unit while pushing the hole under the built-in light unit using a wire.
(2) Turn the bulb housing counterclockwise and detach from the built-in light unit.
(3) Replace the bulb using a dry cloth.
(4) Attach the bulb housing by turning it clockwise, then replace the built-in light unit.



NOTE
Be sure to align the tab with the groove when inserting.

CAUTION

- When replacing the bulb, use only the Sony XB-3D halogen lamp (optional) to reduce the risk of fire.
- To prevent possible burn hazard, disconnect the power source before replacing and do not touch the bulb until the bulb becomes cool enough to handle (for about 30 minutes or more).

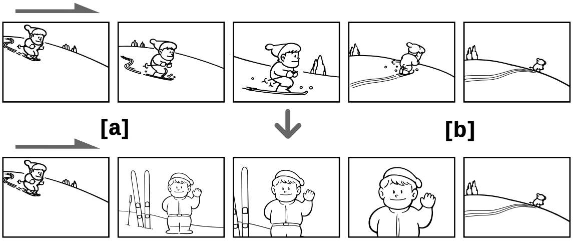
Note

To prevent the bulb from being smudged with finger prints, handle it with a dry cloth, etc. If the bulb is smudged, wipe it thoroughly.

Inserting a scene

350 351

You can insert a scene in the middle of a recorded tape by setting the start and end points. The previously recorded frames between these start and end points will be erased.
Use the Remote Commander for this operation.

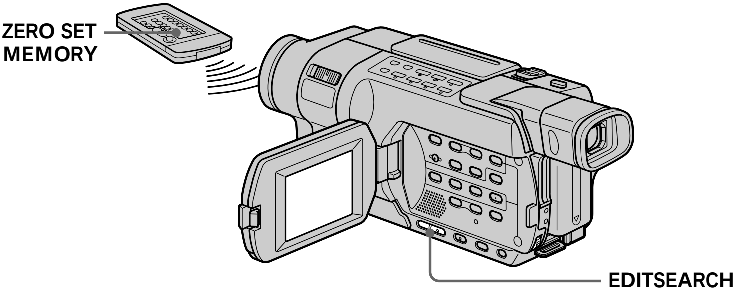


(1) In the standby mode, keep pressing EDITSEARCH, and release the button at the insert end point **[b]**.

(2) Press ZERO SET MEMORY on the Remote Commander.
The ZERO SET MEMORY indicator flashes and the counter resets to zero.

(3) Keep pressing the – ⊖ side of EDITSEARCH and release the button at the insert start point **[a]**.

(4) Press START/STOP to start recording.
The scene is inserted. Recording stops automatically near the counter zero point. Your camcorder returns to the standby mode.
The zero set memory function is canceled.



Notes

- The zero set memory function does not work with tapes recorded in the Hi8 Hi8/ standard 8 mm 8 system.
- The picture and the sound may be distorted at the end of the inserted section when it is played back.

If a tape has a blank portion between recorded portions

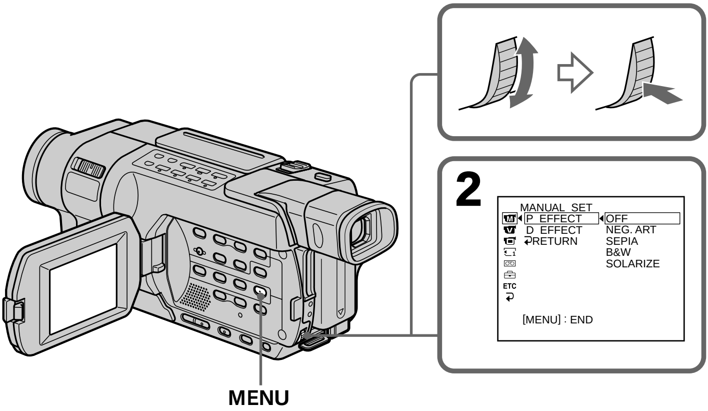
The zero set memory function may not work correctly.

Playing back a tape with picture effects

150 250 350 351

During playback, you can process a scene using the following picture effects: NEG.ART, SEPIA, B&W and SOLARIZE.

(1) In the playback or playback pause mode, press MENU to display the menu settings.
(2) Turn the SEL / PUSH EXEC dial to select P EFFECT in M, then press the dial (p. 211).
(3) Turn the SEL / PUSH EXEC dial to select the desired picture effect mode, then press the dial.
For details of each picture effect, see page 64.


2
MANUAL SET
P EFFECT
D EFFECT
RETURN
OFF
NEG. ART
SEPIA
B&W
SOLARIZE
ETC
[MENU] : END
MENU

To cancel Picture effect

Set P EFFECT to OFF in the menu settings.

Notes

- You cannot record images on a tape on your camcorder while you are processing the image using Picture effect. However, you can record images as follows:
  - on a “Memory Stick” as a still image 350 351
  - on a VCR using your camcorder as a player
- Picture effect does not work with tapes recorded in the Hi8 Hi8/standard 8 mm 8 system.
- You cannot process externally input scenes using Picture effect.

Pictures processed by Picture effect

Pictures processed by Picture effect are not output through the i. DV jack.

When you set the POWER switch to OFF (CHG) or stop playing back

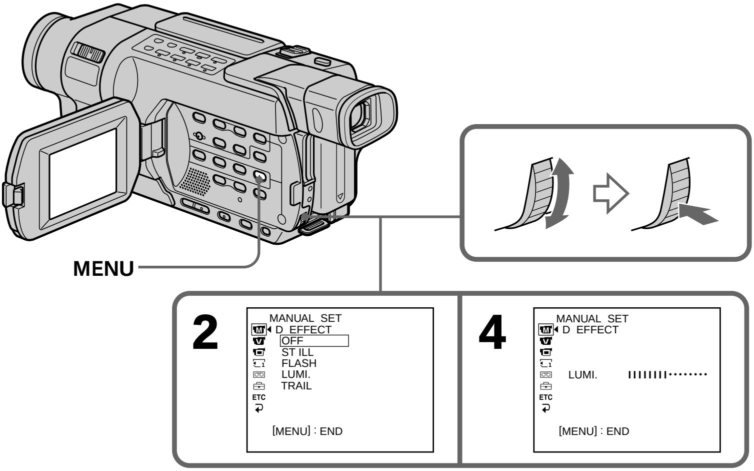
Picture effect is automatically canceled.

Playing back a tape with digital effects

350 **351**

During playback, you can process a scene using the following digital effects:
STILL, FLASH, LUMI. and TRAIL.

(1) In the playback mode or playback pause mode, press MENU to display the menu settings.
(2) Turn the SEL/PUSH EXEC dial to select D EFFECT in M, then press the dial (p. 211).
(3) Turn the SEL/PUSH EXEC dial to select the desired digital effect mode, then press the dial. The bars appear on the screen.
In the STILL or LUMI. mode, the picture shown when you press the SEL/PUSH EXEC dial is captured and stored in memory as a still image at the time.
(4) Turn the SEL/PUSH EXEC dial to adjust the effect, then press the dial.
For details of each digital effect, see page 65.


MENU
2
MANUAL SET
D EFFECT
OFF
STILL
FLASH
LUMI.
TRAIL
ETC
[MENU] : END
4
MANUAL SET
D EFFECT
LUMI.
ETC
[MENU] : END

To cancel Digital effect

Set D EFFECT to OFF in the menu settings.

Notes

- You cannot record images on a tape on your camcorder while you are processing the image using Digital effect. However, you can record images as follows:
  - on a “Memory Stick” as a still image
  - on a VCR using your camcorder as a player
- Digital effect does not work with tapes recorded in the Hi8 Hi8/standard 8 mm 8 system.
- You cannot process externally input scenes using Digital effect.

Pictures processed by Digital effect

Pictures processed by Digital effect are not output through the i DV jack.

When you set the POWER switch to OFF (CHG) or stop playing back

Digital effect is automatically canceled.

Enlarging recorded images – Tape PB ZOOM

350 **351**

You can enlarge an image recorded on tapes.
Besides the operation described here, your camcorder can enlarge still images recorded on a "Memory Stick" (p. 172).

(1) In the playback or playback pause mode, press PB ZOOM. The center of the image is enlarged to about twice its size, and ↑ ↓ appear on the screen.

(2) Turn the SEL/PUSH EXEC dial to move the enlarged image, then press the dial.

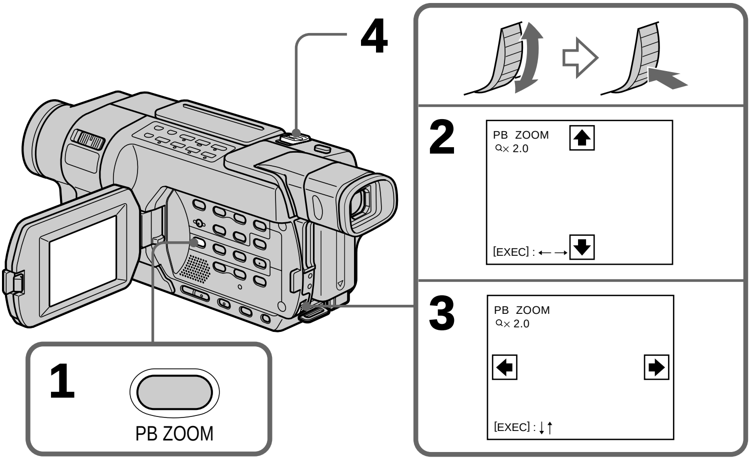
↑ : To view the upper part of the image
↓ : To view the lower part of the image

(3) Turn the SEL/PUSH EXEC dial to move the enlarged image, then press the dial.

← : To view the left part of the image (Turn the dial downward.)
→ : To view the right part of the image (Turn the dial upward.)

(4) Adjust the zoom ratio by the power zoom lever.
You can enlarge the image from 1.1 times up to five times its size.

W : To decrease the zoom ratio
T : To increase the zoom ratio



To cancel Tape PB ZOOM

Press PB ZOOM.

Notes

- You cannot record images on a tape or on a “Memory Stick” on your camcorder while you are processing the image using Tape PB ZOOM. However, you can record images on a VCR using your camcorder as a player.
- Tape PB ZOOM does not work with tapes recorded in the Hi8 Hi8/standard 8 mm 8 system.
- You cannot process externally input scenes using Tape PB ZOOM.

Images in Tape PB ZOOM

These images are not output through the i DV jack.

Tape PB ZOOM is automatically canceled when:

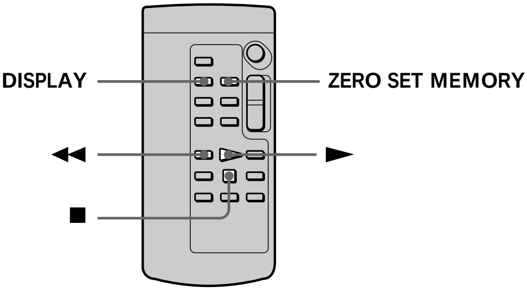
– The POWER switch is set to OFF (CHG).
– You stop playing back.
– You press MENU.
– You press TITLE.

Quickly locating a scene – ZERO SET MEMORY

250 350 351

Your camcorder automatically searches for the scene having a tape counter value of "0:00:00. "
Use the Remote Commander for this operation.
Use this function, for example, to view a desired scene later on during playback.

(1) In the playback mode, press DISPLAY when the tape counter is not displayed on the screen.
(2) Press ZERO SET MEMORY at the point you want to locate later. The tape counter shows "0:00:00," then starts counting.
The ZERO SET MEMORY indicator flashes on the screen.
(3) Press ■ when you want to stop playback.
(4) Press ◀◀ to rewind the tape to the counter's zero point. The tape stops automatically when the counter reaches approximately zero. The ZERO SET MEMORY indicator disappears, and the time code appears.
(5) Press ▶. Playback starts from the counter's zero point.



Notes

- The zero set memory does not work with tapes recorded in the Hi8 Hi8/ standard 8 mm 8 system.
- When you press ZERO SET MEMORY before rewinding the tape, the zero set memory is canceled.
- There may be a discrepancy of several seconds between the time code and the tape counter.

If a tape has a blank portion between recorded portions

The zero set memory may not work correctly.

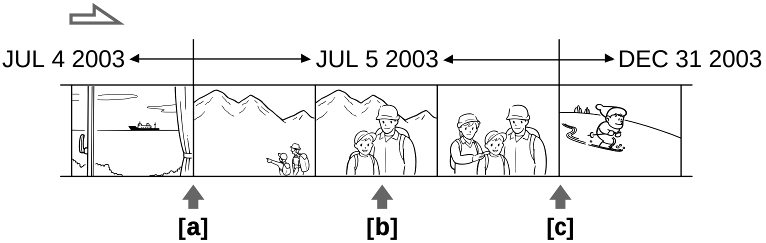
The zero set memory also in the standby mode

When you insert a scene in the middle of a recorded tape, press ZERO SET MEMORY at the point you want to end the insertion. Rewind the tape to the insert start point, and start recording. Recording stops automatically at the tape counter zero point. Your camcorder returns to the standby mode.

Searching for a recording by date – DATE SEARCH

250 **350** **351**

Your camcorder can automatically search for the point where the recording date changes and starts playback from that point.
Use the Remote Commander for this operation.
Use this function to check where recording dates change or to edit the tape at each recording date.



(1) Set the POWER switch to VCR.

(2) Press SEARCH MODE on the Remote Commander repeatedly until the DATE SEARCH indicator appears on the screen. The indicator changes as follows:

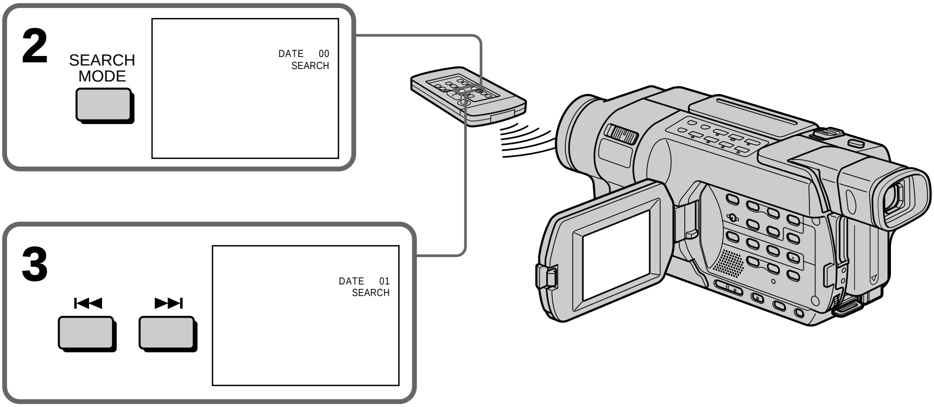
350 **351**

DATE SEARCH ←→ (no indicator)

250

DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → (no indicator)

(3) When the current position is **[b]**, press ⏮ to search toward **[a]** or press ⏭ to search toward **[c]**. Your camcorder automatically starts playback at the point where the date changes.
Each time you press ⏮ or ⏭, your camcorder searches for the previous or next date.



To stop searching

Press ■.

Notes

- The date search function does not work with tapes recorded in the Hi8 Hi8/ standard 8 mm 8 system.
- If one day’s recording is less than two minutes, your camcorder may not accurately find the point where the recording date changes.

If a tape has a blank portion between recorded portions

The date search function may not work correctly.

Searching for a photo – PHOTO SEARCH/PHOTO SCAN

250

You can search for the still image recorded on a tape **(photo search)**.
You can also search for still images one after another and display each image for five seconds automatically **(photo scan)**.
Use the Remote Commander for these operations.

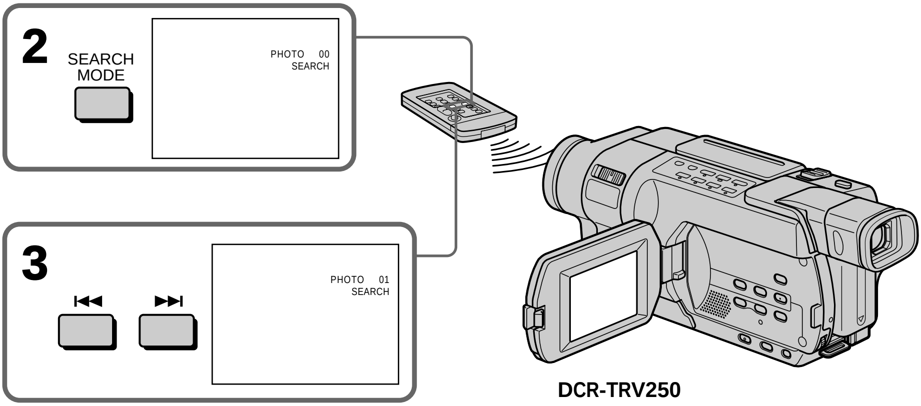
Searching for a photo

(1) Set the POWER switch to VCR.

(2) Press SEARCH MODE on the Remote Commander repeatedly until the PHOTO SEARCH indicator appears on the screen. The indicator changes as follows:

DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → (no indicator)

(3) Press ⏮ or ⏭ to select the photo for playback. Each time you press ⏮ or ⏭ your camcorder searches for the previous or next photo. Your camcorder automatically starts playback of the photo.



To stop searching

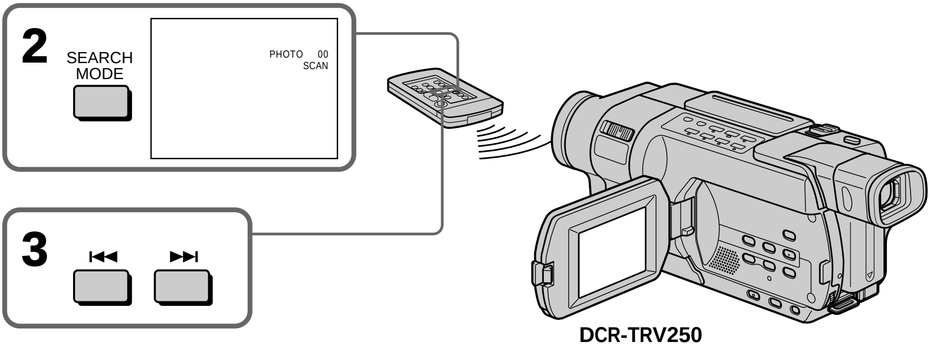
Press ■.

Scanning photo

(1) Set the POWER switch to VCR.

(2) Press SEARCH MODE on the Remote Commander repeatedly until the PHOTO SCAN indicator appears on the screen.
The indicator changes as follows:
DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → (no indicator)

(3) Press ⏮ or ⏭.
Each photo is played back for about five seconds automatically.



To stop scanning

Press ■.

If a tape has a blank portion between recorded portions
The photo search and photo scan function may not work correctly.

Dubbing a tape

Using the A/V connecting cable

You can dub or edit on the VCR connected to your camcorder using your camcorder as a player.

Before operation

- Set DISPLAY to LCD in the menu settings. (The default setting is LCD.)
- Press the following buttons to make the indicators disappear so that they will not be superimposed on the edited tape:
  - DATA CODE on the Remote Commander 250 350 351
  - SEARCH MODE on the Remote Commander 250 350 351
  - DISPLAY

(1) Insert a tape for recording into the VCR, and insert the recorded tape into your camcorder.

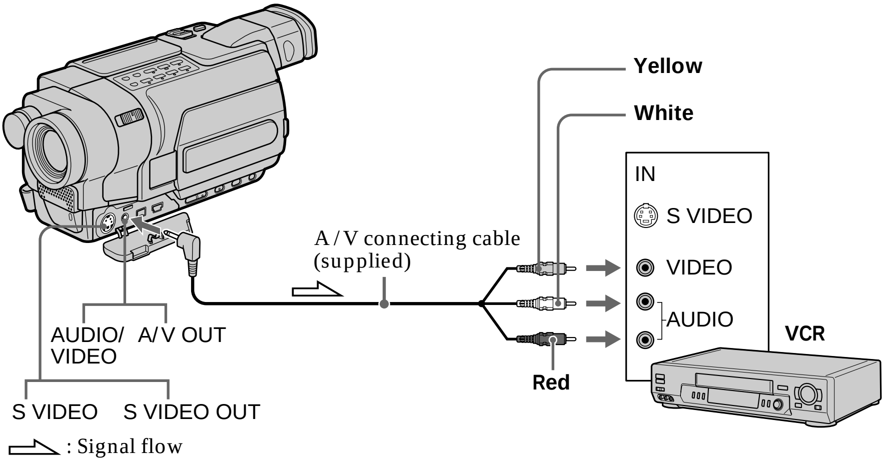
(2) Prepare the VCR for recording, then set the input selector to LINE.
Connect the A/V connecting cable to the AUDIO/VIDEO jack. Refer to the operating instructions of your VCR.

(3) Set the POWER switch to VCR/PLAYER.*

(4) Play back the recorded tape on your camcorder.

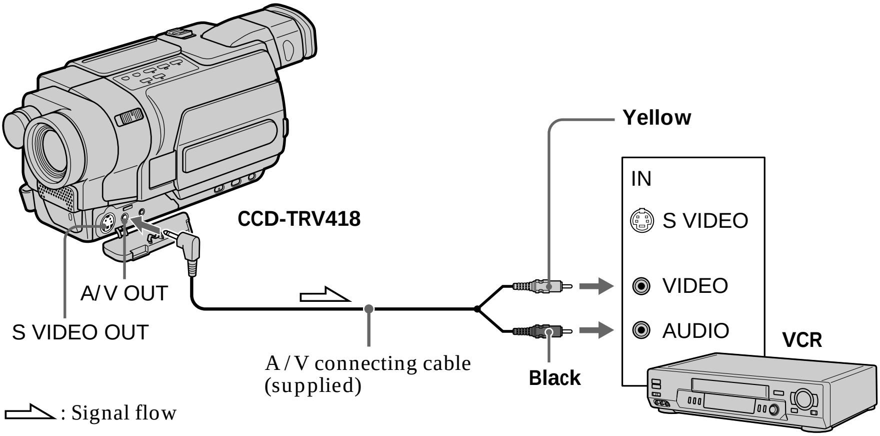
(5) Start recording on the VCR.
Refer to the operating instructions of your VCR.

150 250 350 351


Yellow
White
IN
S VIDEO
VIDEO
AUDIO
VCR
A/V connecting cable (supplied)
Red
AUDIO/VIDEO
A/V OUT
S VIDEO
S VIDEO OUT
: Signal flow

* Modes on the POWER switch vary depending on models (p. 16).

118 318 418



When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

To prevent deterioration of pictures when dubbing

118 318 418

Set EDIT to ON in the menu settings before dubbing. (The default setting is OFF.) (p. 214)

You can edit on VCRs that support the following systems:

8 mm 8, Hi8 Hi8, Digital8 D, VHS VHS, S-VHS SVHS, VHSC VHSC, S-VHSC SVHSC, Betamax B, ED Betamax ED Beta, mini DV Mini DV, DV DV, or MICRO MV MICRO MV.

If your VCR is a monaural type 150 250 350 351

Connect the yellow plug of the A/V connecting cable to the video input jack and the white or the red plug to the audio input jack on the VCR. When the white plug is connected, the left channel audio is output, and when the red plug is connected, the right channel audio is output.

If your VCR is a stereo type 118 318 418

Connect the audio plug of the A/V connecting cable to the left (white) input jack of your VCR.

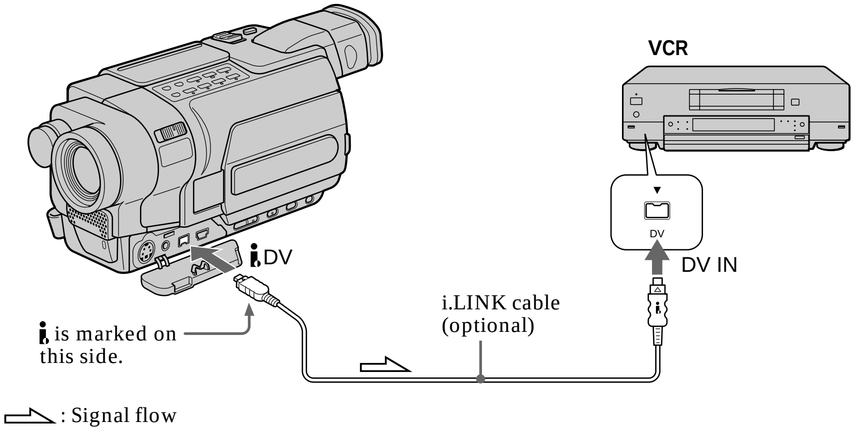
If your VCR has an S video jack

Pictures can be reproduced more faithfully by using an S video cable (optional).
With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcorder and the VCR.

Using the i.LINK cable 150 250 350 351

Simply connect the i.LINK cable (optional) to i DV on your camcorder and to DV IN on the DV products. With a digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing. You cannot dub the screen indicators.

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
(2) Set the input selector on the VCR to DV IN if it is available. Refer to the operating instructions of your VCR.
(3) Set the POWER switch to VCR on your camcorder.
(4) Play back the recorded tape on your camcorder.
(5) Start recording on the VCR.
Refer to the operating instructions of your VCR.



⇨ : Signal flow

When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

Note on tapes that are recorded in the Hi8 Hi8/standard 8 mm 8 system

The picture may fluctuate. This is not a malfunction. Digital signals are output as image signals from the i DV jack during playback.

You can connect one VCR only using the i.LINK cable

See page 244 for more information about i.LINK.

Pictures processed by the following functions cannot be output through the i DV jack:

– Digital effect 350 351
– Tape PB ZOOM 350 351
– Picture effect

If you record paused playback picture with the i DV jack

The recorded picture becomes rough. Also, when you play back the picture using other video equipment, the picture may jitter.

When you connect using an i.LINK cable

You cannot dub the titles and display indicators.

Dubbing a tape easily – Easy Dubbing

118 318 418

VCR operation for dubbing can be controlled easily by using your camcorder when the VCR is connected.
You can select one of eight preset titles and two custom titles stored in your camcorder as instructed in “Making your own titles” (p. 77). Select the desired color, size, and background color of titles.

Using the Easy Dubbing

Step 1 Connecting the VCR
Step 2 Setting the VCR to operate with your camcorder (p. 99 to 102)
Step 3 Selecting the title (p. 103)
Step 4 Selecting the dubbing mode (p. 104)
Step 5 Performing Easy Dubbing (p. 105)

If you dub using the same VCR again, you can skip **Step 2** (p. 99 to 102).
If you do not need to put in a title, you can skip **Step 3** (p. 103).

Step 1: Connecting the VCR

Connect the devices as illustrated in page 95.

You can edit on VCRs that support the following systems:
8 mm 8, Hi8 Hi8, Digital8 D, VHS VHS, S-VHS SVHS, VHSC VHSC, S-VHSC SVHSC, Betamax B, ED Betamax ED Beta, mini DV Mini DV, DV DV, or MICRO MV MICROMV.

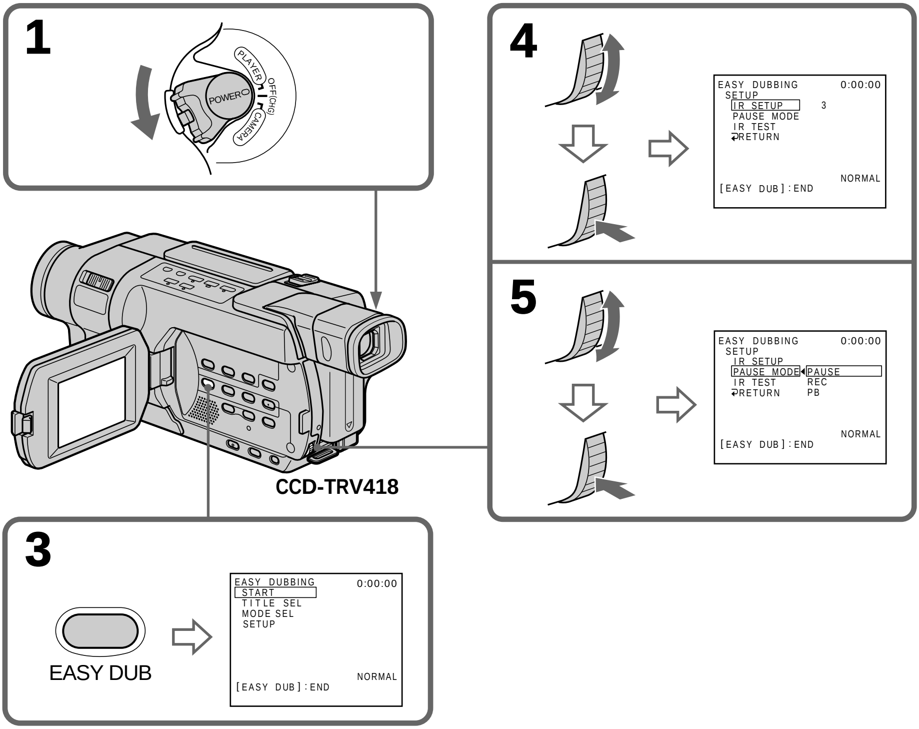
If your VCR has an S video jack
Picture can be reproduced more faithfully by using an S video cable (optional).
With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcorder and the VCR.

Step 2: Setting the VCR to operate with your camcorder

Signals to control the VCR are sent from your camcorder’s infrared rays emitter to the VCR’s remote sensor.
When you connect using the A/V connecting cable, follow the procedure below, steps **(1)** to **(4)**, to send the control signal correctly.

(1) Setting the modes to cancel recording pause on the VCR

① Set the POWER switch to PLAYER on your camcorder.
② Turn the power of the connected VCR on, then set the input selector to LINE. When you connect a video camera recorder, set its power switch to VTR/VCR.
③ Press EASY DUB to display the menu.
④ Turn the SEL/PUSH EXEC dial to select SETUP, then press the dial.
⑤ Turn the SEL/PUSH EXEC dial to select PAUSE MODE, then press the dial.
⑥ Turn the SEL/PUSH EXEC dial to select the mode to cancel recording pause on the VCR, then press the dial.

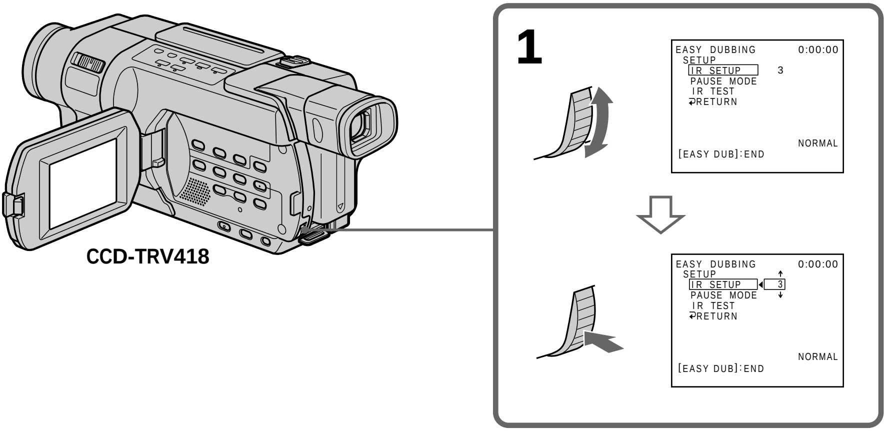

1
PLAYER
OFF(CHG)
CAMERA
POWER
4
EASY DUBBING 0:00:00
SETUP
IR SETUP 3
PAUSE MODE
IR TEST
RETURN
NORMAL
[EASY DUB]:END
5
EASY DUBBING 0:00:00
SETUP
IR SETUP
PAUSE MODE PAUSE
IR TEST REC
RETURN PB
NORMAL
[EASY DUB]:END
CCD-TRV418
3
EASY DUB
EASY DUBBING 0:00:00
START
TITLE SEL
MODE SEL
SETUP
NORMAL
[EASY DUB]:END

Buttons for canceling recording pause on the VCR

The buttons vary depending on your VCR. To cancel recording pause:
– Select PAUSE if the button to cancel recording pause is ❚❚.
– Select REC if the button to cancel recording pause is ●.
– Select PB if the button to cancel recording pause is ►.

(2) Setting the IR SETUP code

① Turn the SEL / PUSH EXEC dial to select IR SETUP, then press the dial.
② Turn the SEL / PUSH EXEC dial to select the IR SETUP code of your VCR, then press the dial.
Check the code in “About the IR SETUP code” (p. 101).


CCD-TRV418
1
EASY DUBBING 0:00:00
SETUP
IR SETUP 3
PAUSE MODE
IR TEST
RETURN
NORMAL
[EASY DUB]:END
EASY DUBBING 0:00:00
SETUP
IR SETUP 3
PAUSE MODE
IR TEST
RETURN
NORMAL
[EASY DUB]:END

About the IR SETUP code

The IR SETUP code is stored in the memory of your camcorder. Be sure to set the correct code depending on your VCR. The default setting is Code number 3.

Brand	IR SETUP code
Sony	1, 2, 3, 4, 5, 6
Admiral (M. Wards)	89
Aiwa	80, 47, 54
Akai	49, 51
Audio Dynamic	21, 35
Bell&Howell (M. Wards)	36
Brocsonic	70, 82, 21
Canon	77, 78
Citizen	47
Craig	73, 47
Curtis Mathis	8, 80, 77
Daewoo	26, 40, 77
DBX	21, 33, 35
Dimensia	8
Emerson	26, 82, 59, 48, 70, 81, 80
Fisher	36, 45, 37, 44
Funai	80
General Electric	8, 77, 32*, 94*, 101
Goldstar/LG	47
GO VIDEO	71
Hitachi	78, 8, 42
HQ	40
Instant Replay	77, 78
JC Penny	77, 42, 8, 36, 21, 33, 35
JVC	21, 12, 13, 14, 33, 35
Kenwood	21, 33, 47, 35
LXI (Sears)	80, 47, 42, 44, 45, 36, 37, 49
Magnavox	83, 78, 77, 17
Marantz	21, 33, 35
Marta	47
Memorex	77, 37
Minolta	42, 8
Mitsubishi/MGA	28, 22, 23, 24, 29
Multitech	23, 80, 32
NEC	21, 33, 35
Olympic	77, 78
Optimus	22
Orion	60
Panasonic	16, 17, 78, 77
Pentax	42, 8
Philco	78, 77, 26, 70
Philips	47, 83, 78, 77
Pioneer	78
Quasar	78, 77, 16, 17, 6
RCA/PROSCAN	8, 42, 16, 77, 83, 7, 40, 41, 78, 78*, 101
Realistic	77, 36, 88, 37, 22, 80
Sansui	21
Singer	73
Samsung	94, 41, 32, 24, 32*, 94*, 24*
Sanyo	36, 37, 26, 36, 47
Scott	40, 41, 32, 37, 28, 22, 23, 24
Sharp	89, 88
Shintom	73
Signature 2000 (M. Wards)	80, 89
Sylvania	83, 78, 77, 80
Symphonic	80
Tashiro	47
Tatung	21, 33, 35
Teac	21, 33, 80, 35
Technics	77, 78
Toshiba	40, 7, 49
Wards	89, 88, 37, 95, 47
Yamaha	36, 21, 33, 35
Zenith	95

* TV/VCR component

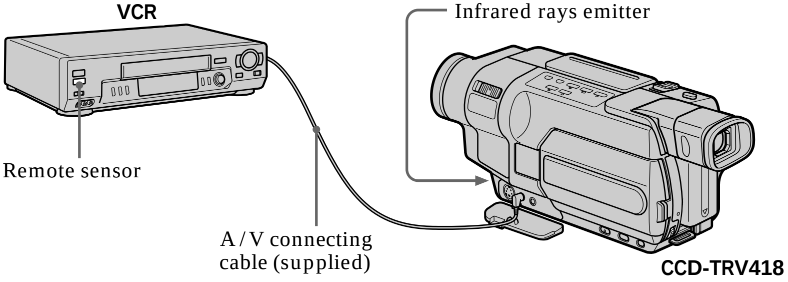
Note on IR SETUP code

Easy Dubbing is not possible if the VCR does not support IR SETUP codes.

(3) Setting your camcorder and the VCR to face each other

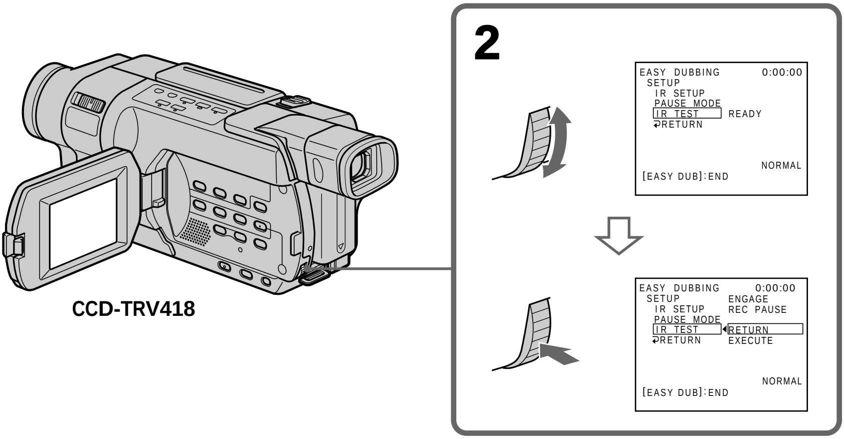
Locate the infrared rays emitter of your camcorder and face it towards the remote sensor of the VCR.

Set the devices about 30 cm (12 in.) apart, and remove any obstacles between the devices.


VCR
Infrared rays emitter
Remote sensor
A/V connecting cable (supplied)
CCD-TRV418

(4) Confirming the VCR operation

① Insert a recordable tape into the VCR, then set the VCR to recording pause.
② Turn the SEL/PUSH EXEC dial to select IR TEST, then press the dial.
③ Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.
If the VCR starts recording, the setting is correct.
When recording is finished, the indicator changes to COMPLETE.

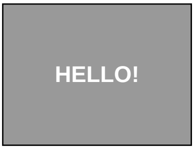

CCD-TRV418
2
EASY DUBBING 0:00:00
SETUP
IR SETUP
PAUSE MODE
IR TEST READY
RETURN
NORMAL
[EASY DUB]:END
EASY DUBBING 0:00:00
SETUP ENGAGE
IR SETUP REC PAUSE
PAUSE MODE
IR TEST RETURN
RETURN EXECUTE
NORMAL
[EASY DUB]:END

When the VCR does not operate correctly

- After checking the code in “About the IR SETUP code,” set IR SETUP or PAUSE MODE again.
- Place your camcorder at least 30 cm (12 in.) away from the VCR.
- Refer to the operating instructions of your VCR.

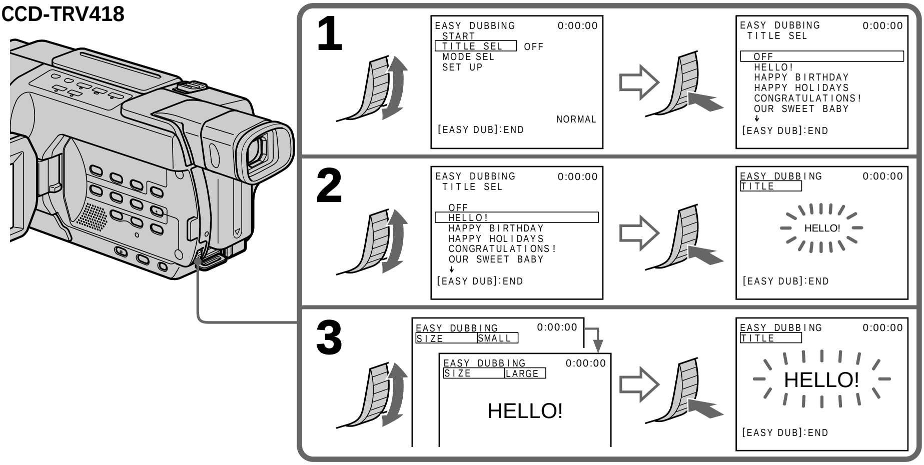
Step 3: Selecting the title

You can select title, color, size, and background color.
CUSTOM1 and CUSTOM2 are custom titles stored in your camcorder as instructed in "Making your own titles" (p. 77).



(1) Turn the SEL / PUSH EXEC dial to select TITLE SEL, then press the dial.
(2) Select the desired title in the menu settings, then press the dial.
The title flashes.
(3) Change the color, size, or background color.
If you do not need to change them, go to **Step 4** (p. 104).
① Turn the SEL / PUSH EXEC dial to select the color, size, or background color, then press the dial. The item appears.
② Turn the SEL / PUSH EXEC dial to select the desired item, then press the dial.
③ Repeat steps ① and ② until the title is laid out as desired.
(4) Press the SEL / PUSH EXEC dial again to complete the setting.

CCD-TRV418


1
EASY DUBBING 0:00:00
START
TITLE SEL OFF
MODE SEL
SET UP
NORMAL
[EASY DUB]:END
EASY DUBBING 0:00:00
TITLE SEL
OFF
HELLO!
HAPPY BIRTHDAY
HAPPY HOLIDAYS
CONGRATULATIONS!
OUR SWEET BABY
[EASY DUB]:END
2
EASY DUBBING 0:00:00
TITLE SEL
OFF
HELLO!
HAPPY BIRTHDAY
HAPPY HOLIDAYS
CONGRATULATIONS!
OUR SWEET BABY
[EASY DUB]:END
EASY DUBBING 0:00:00
TITLE
HELLO!
[EASY DUB]:END
3
EASY DUBBING 0:00:00
SIZE SMALL
EASY DUBBING 0:00:00
SIZE LARGE
HELLO!
EASY DUBBING 0:00:00
TITLE
HELLO!
[EASY DUB]:END

Note

You can put a title only into the tape of the VCR.

Title setting

- The title color changes as follows:
  WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE
- The title size changes as follows:
  SMALL ←→ LARGE
- The background color changes as follows:
  FADE ←→ WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE ←→ BLACK

Step 4: Selecting the dubbing mode

You can choose either normal recording (NORMAL) or interval recording (PREVIEW).

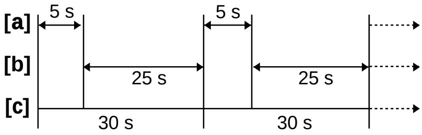
(1) Turn the SEL / PUSH EXEC dial to select MODE SEL, then press the dial.

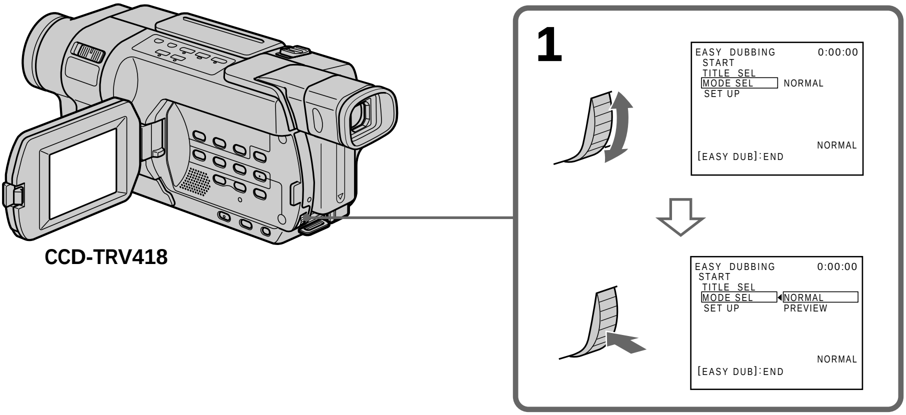
(2) Turn the SEL / PUSH EXEC dial to select NORMAL or PREVIEW, then press the dial.

– NORMAL: You can record into the VCR normally.

– PREVIEW: You can make a time-lapse dubbing by setting the VCR to automatically repeat five seconds' recording and 25 seconds' standby.

[a]: Recording time (VCR)
[b]: Waiting time (VCR)
[c]: Playback time (camcorder)


[a]
[b]
[c]
5 s
5 s
25 s
25 s
30 s
30 s


CCD-TRV418
1
EASY DUBBING 0:00:00
START
TITLE SEL
MODE SEL NORMAL
SET UP
NORMAL
[EASY DUB]:END
EASY DUBBING 0:00:00
START
TITLE SEL
MODE SEL NORMAL
PREVIEW
SET UP
NORMAL
[EASY DUB]:END

Step 5: Performing Easy Dubbing

Make sure that your camcorder and VCR are connected, and that the VCR is set to recording pause.
When you use a video camera recorder, set its power switch to VTR/VCR. Set the POWER switch of your camcorder to PLAYER.

(1) Turn the SEL/PUSH EXEC dial to select START, then press the dial.

(2) Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial. When dubbing ends, your camcorder and VCR stop automatically. Then the display returns to the Easy Dubbing initial screen.

To stop dubbing during editing

Press ■ on your camcorder.

To quit Easy Dubbing

Press EASY DUB.

Note

If you set the background color to FADE in **Step 3** (p. 103), the picture may not appear properly depending on the connected VCR.

You cannot record on the VCR when:

– The tape has run out.
– The write-protect tab is set to lock.
– The IR SETUP code is not correct.
– The button used to cancel recording pause is not correct.

NOT READY appears on the screen when

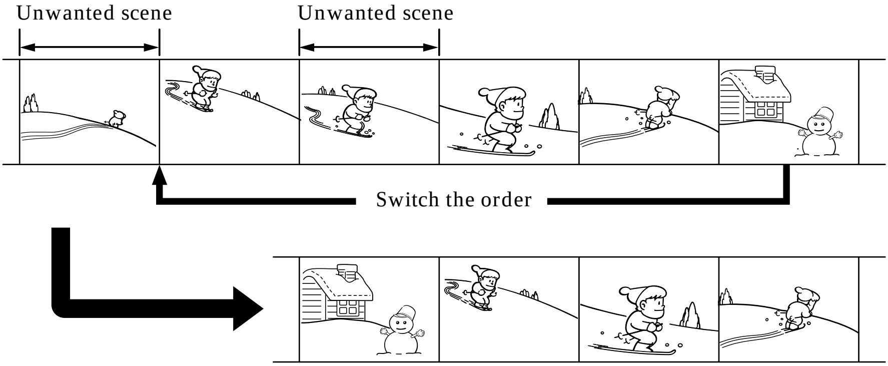
START is not carried out.

Dubbing only desired scenes – Digital program editing (on tapes)

150 **250** **350** **351**

You can duplicate selected scenes (programs) for editing onto a tape without operating the VCR.
Scenes can be selected by frame. You can set up to 20 programs.

350 **351**
Your camcorder can dub on a “Memory Stick.” See page 156 for more information.



Before operation

Step 1 Connecting the VCR (p. 107)
Step 2 Setting the VCR for operation
  – with the A/V connecting cable (p. 107 to 110)
  – with the i.LINK cable (p. 111 to 112)
Step 3 Adjusting the synchronization of the VCR (p. 113)
When you dub using the same VCR again, you can skip **Step 2** (p. 107 to 112) and **Step 3** (p. 113 to 114).

Using this function

Operation 1 Making a program (p. 115)
Operation 2 Performing the program (Dubbing a tape) (p. 118)

Note
Digital program editing does not work with tapes recorded in the Hi8 **Hi8**/ standard 8 mm **8** system.

Step 1: Connecting the VCR

You can connect either an A/V connecting cable or an i.LINK cable.
When you use the A/V connecting cable, connect the devices as illustrated in page 94.
When you use the i.LINK cable, connect the devices as illustrated on page 96.

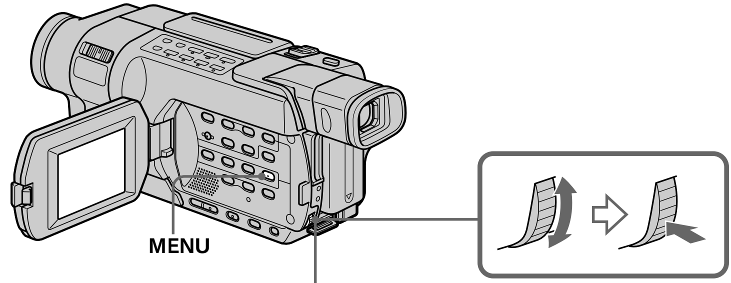
If you connect using the i.LINK cable
With a digital-to-digital connection, video and audio signals are transmitted in digital format for high-quality editing.

Step 2: Setting the VCR for operation with the A/V connecting cable

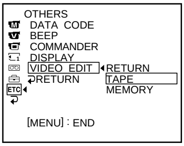
To edit using the VCR, set up your camcorder to send the control signal by infrared rays to the remote sensor on the VCR.
When you connect using the A/V connecting cable, follow the procedure below, steps **(1)** to **(4)**, to send the control signal correctly.

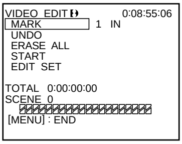
(1) Set the IR SETUP code

① Set the POWER switch to VCR on your camcorder.
② Turn the power of the connected VCR on, then set the input selector to LINE.
When you connect a video camera recorder, set its power switch to VCR/VTR.
③ Press MENU to display the menu settings.
④ Turn the SEL/PUSH EXEC dial to select ETC, then press the dial.
⑤ **350** **351**
Turn the SEL/PUSH EXEC dial to select TAPE in VIDEO EDIT, then press the dial.
150 **250**
Turn the SEL/PUSH EXEC dial to select VIDEO EDIT, then press the dial.
⑥ Turn the SEL/PUSH EXEC dial to select EDIT SET, then press the dial.
⑦ Turn the SEL/PUSH EXEC dial to select CONTROL, then press the dial.
⑧ Turn the SEL/PUSH EXEC dial to select IR, then press the dial.
⑨ Turn the SEL/PUSH EXEC dial to select IR SETUP, then press the dial.
⑩ Turn the SEL/PUSH EXEC dial to select IR SETUP code number of your VCR, then press the dial.
Check the code in “About the IR SETUP code” (p. 101).

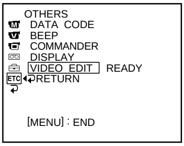


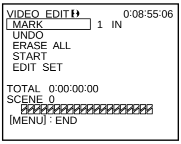
5 350 351


OTHERS
DATA CODE
BEEP
COMMANDER
DISPLAY
VIDEO EDIT RETURN
RETURN TAPE
ETC MEMORY
[MENU] : END

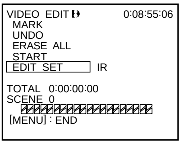

VIDEO EDIT 0:08:55:06
MARK 1 IN
UNDO
ERASE ALL
START
EDIT SET
TOTAL 0:00:00:00
SCENE 0
[MENU] : END

150 250

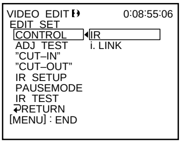

OTHERS
DATA CODE
BEEP
COMMANDER
DISPLAY
VIDEO EDIT READY
ETC RETURN
[MENU] : END


VIDEO EDIT 0:08:55:06
MARK 1 IN
UNDO
ERASE ALL
START
EDIT SET
TOTAL 0:00:00:00
SCENE 0
[MENU] : END

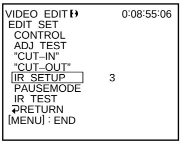
6


VIDEO EDIT 0:08:55:06
MARK
UNDO
ERASE ALL
START
EDIT SET IR
TOTAL 0:00:00:00
SCENE 0
[MENU] : END

7

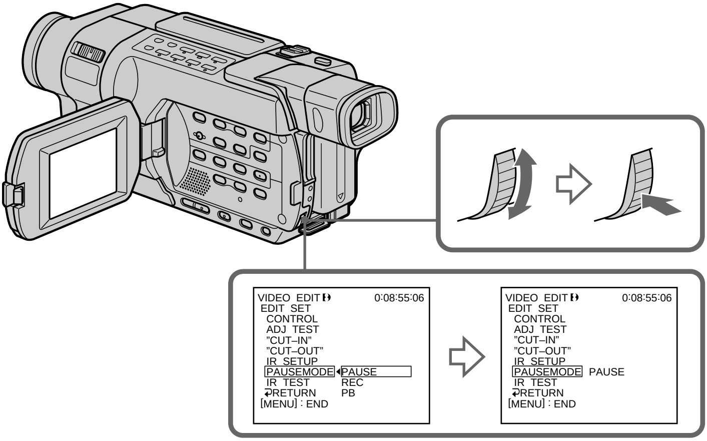

VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL IR
ADJ TEST i. LINK
"CUT–IN"
"CUT–OUT"
IR SETUP
PAUSEMODE
IR TEST
RETURN
[MENU] : END

10


VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST
"CUT–IN"
"CUT–OUT"
IR SETUP 3
PAUSEMODE
IR TEST
RETURN
[MENU] : END

(2) Setting the modes to cancel the recording pause on the VCR

① Turn the SEL / PUSH EXEC dial to select PAUSEMODE, then press the dial.
② Turn the SEL / PUSH EXEC dial to select the mode to cancel recording pause on the VCR, then press the dial.
Refer to the operating instructions of your VCR.


VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST
"CUT–IN"
"CUT–OUT"
IR SETUP
PAUSEMODE PAUSE
IR TEST REC
RETURN PB
[MENU] : END
VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST
"CUT–IN"
"CUT–OUT"
IR SETUP
PAUSEMODE PAUSE
IR TEST
RETURN
[MENU] : END

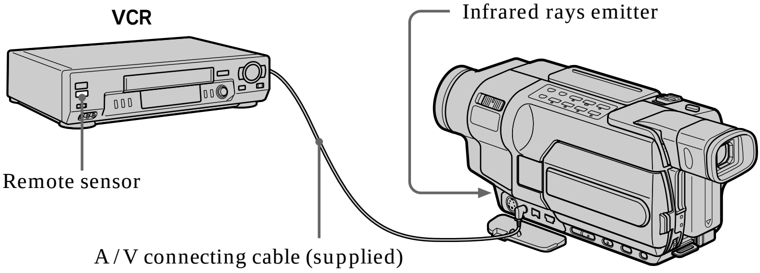
Buttons to cancel recording pause on the VCR

The buttons vary depending on your VCR. To cancel recording pause:
– Select PAUSE if the button to cancel recording pause is ❚❚.
– Select REC if the button to cancel recording pause is ●.
– Select PB if the button to cancel recording pause is ►.

(3) Setting your camcorder and the VCR to face each other

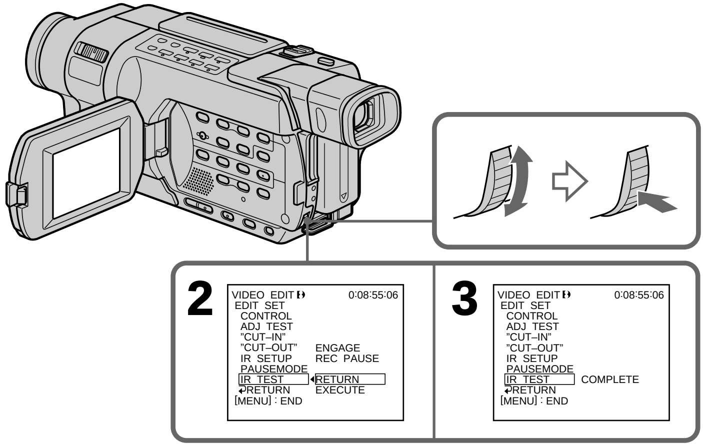
Locate the infrared rays emitter of your camcorder and face it toward the remote sensor of the VCR.

Set the devices about 30 cm (12 in.) apart, and remove any obstacles between the devices.


VCR
Infrared rays emitter
Remote sensor
A / V connecting cable (supplied)

(4) Confirming VCR operation

① Insert a recordable tape into the VCR, then set the VCR to recording pause.
② Turn the SEL / PUSH EXEC dial to select IR TEST, then press the dial.
③ Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
If the VCR starts recording, the setting is correct.
When recording is finished, the indicator changes to COMPLETE.


2
VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST
"CUT–IN"
"CUT–OUT" ENGAGE
IR SETUP REC PAUSE
PAUSEMODE
IR TEST RETURN
RETURN EXECUTE
[MENU] : END
3
VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST
"CUT–IN"
"CUT–OUT"
IR SETUP
PAUSEMODE
IR TEST COMPLETE
RETURN
[MENU] : END

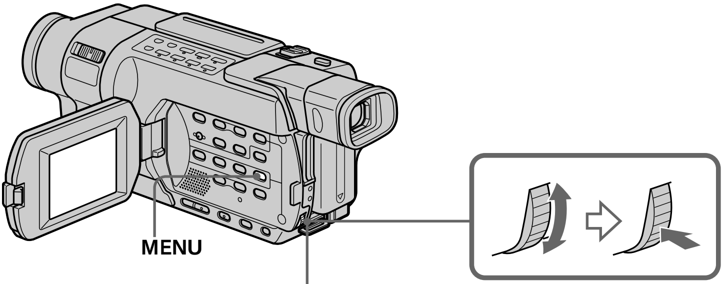
When the VCR does not operate correctly

- After checking the code in “About the IR SETUP code,” set IR SETUP or PAUSEMODE again.
- Place your camcorder at least 30 cm (12 in.) away from the VCR.
- Refer to the operating instructions of your VCR.

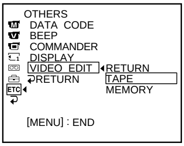
Step 2: Setting the VCR for operation with the i.LINK cable

When you connect using the i.LINK cable (optional), follow the procedure below.

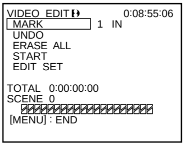
(1) Set the POWER switch to VCR on your camcorder.
(2) Turn the power of the connected VCR on, then set the input selector to DV input. When you connect a digital video camera recorder, set its power switch to VCR/VTR.
(3) Press MENU to display the menu settings.
(4) Turn the SEL/PUSH EXEC dial to select ETC, then press the dial.
(5) **350** **351**
Turn the SEL/PUSH EXEC dial to select TAPE in VIDEO EDIT, then press the dial.
150 **250**
Turn the SEL/PUSH EXEC dial to select VIDEO EDIT, then press the dial.
(6) Turn the SEL/PUSH EXEC dial to select EDIT SET, then press the dial.
(7) Turn the SEL/PUSH EXEC dial to select CONTROL, then press the dial.
(8) Turn the SEL/PUSH EXEC dial to select i.LINK, then press the dial.



5 350 351

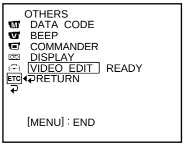


```
   OTHERS
   DATA CODE
   BEEP
   COMMANDER
   DISPLAY
   VIDEO EDIT  ◂RETURN
   ↩RETURN      TAPE
                MEMORY

   [MENU] : END
```

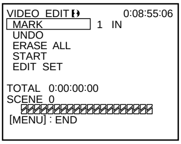


```
VIDEO EDIT         0:08:55:06
 MARK          1  IN
 UNDO
 ERASE ALL
 START
 EDIT SET

TOTAL  0:00:00:00
SCENE  0
[MENU] : END
```

150 250

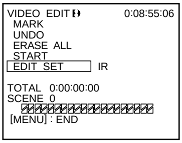


```
   OTHERS
   DATA CODE
   BEEP
   COMMANDER
   DISPLAY
   VIDEO EDIT   READY
   ↩RETURN

   [MENU] : END
```



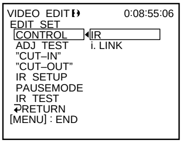
```
VIDEO EDIT         0:08:55:06
 MARK          1  IN
 UNDO
 ERASE ALL
 START
 EDIT SET

TOTAL  0:00:00:00
SCENE  0
[MENU] : END
```

6



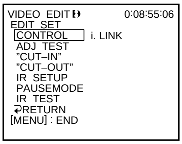
```
VIDEO EDIT         0:08:55:06
 MARK
 UNDO
 ERASE ALL
 START
 EDIT SET        IR

TOTAL  0:00:00:00
SCENE  0
[MENU] : END
```

7



```
VIDEO EDIT         0:08:55:06
 EDIT SET
  CONTROL    ◂IR
  ADJ TEST     i. LINK
  "CUT–IN"
  "CUT–OUT"
  IR SETUP
  PAUSEMODE
  IR TEST
  ↩RETURN
[MENU] : END
```

8



```
VIDEO EDIT         0:08:55:06
 EDIT SET
  CONTROL      i. LINK
  ADJ TEST
  "CUT–IN"
  "CUT–OUT"
  IR SETUP
  PAUSEMODE
  IR TEST
  ↩RETURN
[MENU] : END
```

Note 350 351

When editing digital video, the operation signals cannot be sent with LANC.

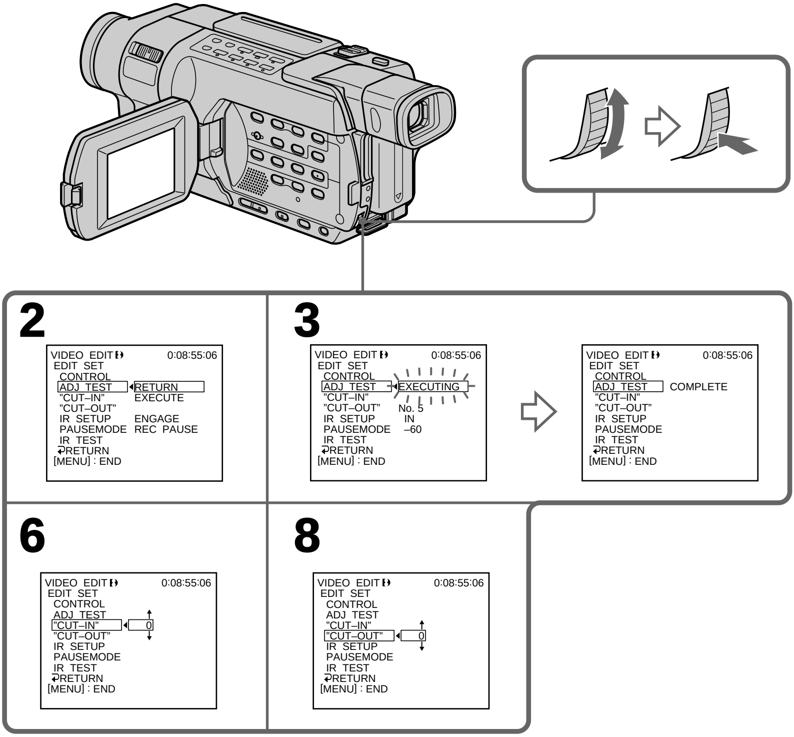
When you connect using an i.LINK cable

- You cannot dub the titles and display indicators.
- You may not be able to operate the dubbing function correctly, depending on the VCR. Set CONTROL to IR in the menu settings of your camcorder.

Step 3: Adjusting the synchronization of the VCR

You can adjust the synchronization of your camcorder and the VCR. Have a pen and paper ready for notes. Before operation, eject the cassette from your camcorder if inserted.

(1) Insert a tape for recording into the VCR, then set the VCR to recording pause.
When you select i.LINK in CONTROL, you do not need to set the VCR to recording pause.
(2) Turn the SEL/PUSH EXEC dial to select ADJ TEST, then press the dial.
(3) Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.
IN and OUT are recorded on an image five times each to calculate the numerical values for adjusting the synchronization.
The EXECUTING indicator flashes on the screen.
When finished, the indicator changes to COMPLETE.
(4) Rewind the tape in the VCR, then start slow playback.
Take a note of the first numerical value of each IN and the last numerical value of each OUT.
(5) Calculate the average of all the first numerical values of each IN, and the average of all the last numerical values of each OUT.
(6) Turn the SEL/PUSH EXEC dial to select “CUT-IN,” then press the dial.
(7) Turn the SEL/PUSH EXEC dial to select the average numerical value of IN, then press the dial.
The calculated start position for recording is set.
(8) Turn the SEL/PUSH EXEC dial to select “CUT-OUT,” then press the dial.
(9) Turn the SEL/PUSH EXEC dial to select the average numerical value of OUT, then press the dial.
The calculated stop position for recording is set.
(10) Turn the SEL/PUSH EXEC dial to select ↩ RETURN, then press the dial.


2
VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST RETURN
"CUT–IN" EXECUTE
"CUT–OUT"
IR SETUP ENGAGE
PAUSEMODE REC PAUSE
IR TEST
RETURN
[MENU] : END
3
VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST EXECUTING
"CUT–IN"
"CUT–OUT" No. 5
IR SETUP IN
PAUSEMODE –60
IR TEST
RETURN
[MENU] : END
VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST COMPLETE
"CUT–IN"
"CUT–OUT"
IR SETUP
PAUSEMODE
IR TEST
RETURN
[MENU] : END
6
VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST
"CUT–IN" 0
"CUT–OUT"
IR SETUP
PAUSEMODE
IR TEST
RETURN
[MENU] : END
8
VIDEO EDIT 0:08:55:06
EDIT SET
CONTROL
ADJ TEST
"CUT–IN"
"CUT–OUT" 0
IR SETUP
PAUSEMODE
IR TEST
RETURN
[MENU] : END

Notes

- When you complete step **(3)**, the image used to adjust synchronization is recorded for about 50 seconds.
- If you start recording from the very beginning of the tape, the first few seconds of the tape may not record properly. Be sure to allow about 10 seconds' lead before starting recording.
- When you connect with the i.LINK cable, you may not be able to operate the dubbing function correctly depending on the VCR.
  Keep the i.LINK connection, and set CONTROL to IR in the menu settings.
  Video and audio signals are transmitted in digital format.

Operation 1: Making a program

(1) Insert a tape for playback into your camcorder, and insert a tape for recording into the VCR.

(2) Press MENU to display the menu settings.

(3) Turn the SEL/PUSH EXEC dial to select ETC, then press the dial.

(4) 350 351

Turn the SEL/PUSH EXEC dial to select TAPE in VIDEO EDIT, then press the dial.

150 250

Turn the SEL/PUSH EXEC dial to select VIDEO EDIT, then press the dial.

(5) Search for the beginning of the first scene you want to insert using the video control buttons, then pause playback.

350 351

You can fine-adjust one frame at a time with EDITSEARCH.

(6) Turn the SEL/PUSH EXEC dial to select MARK, then press the dial.

The IN point of the first program is set, and the upper part of the program mark changes to light blue.

(7) Search for the end of the first scene you want to insert using the video control buttons, then pause playback.

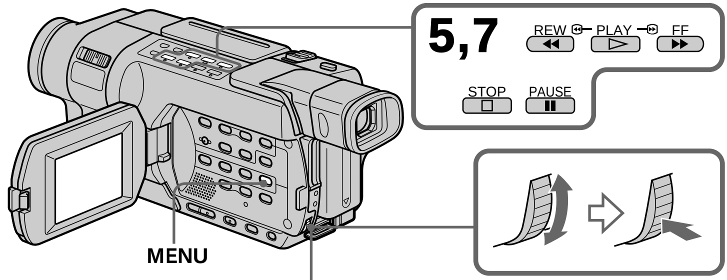
(8) Press the SEL/PUSH EXEC dial.

The OUT point of the first program is set, then the lower part of the program mark changes to light blue.

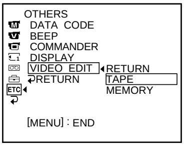
(9) Repeat steps **(5)** to **(8)** to set other programs.

When the program is set, the program mark changes to light blue.

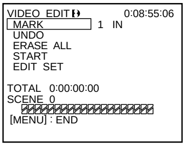
You can set up to 20 programs.



4 350 351

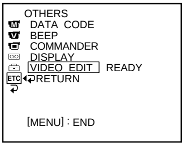


```
OTHERS
DATA CODE
BEEP
COMMANDER
DISPLAY
VIDEO EDIT  RETURN
RETURN      TAPE
            MEMORY

[MENU] : END
```

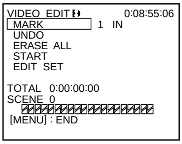


```
VIDEO EDIT          0:08:55:06
MARK          1  IN
UNDO
ERASE ALL
START
EDIT SET

TOTAL  0:00:00:00
SCENE  0
[MENU] : END
```

150 250

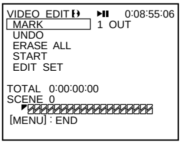


```
OTHERS
DATA CODE
BEEP
COMMANDER
DISPLAY
VIDEO EDIT     READY
RETURN


[MENU] : END
```



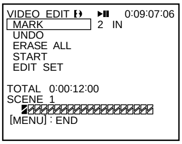
```
VIDEO EDIT          0:08:55:06
MARK          1  IN
UNDO
ERASE ALL
START
EDIT SET

TOTAL  0:00:00:00
SCENE  0
[MENU] : END
```

6



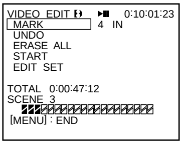
```
VIDEO EDIT     ▶II  0:08:55:06
MARK          1  OUT
UNDO
ERASE ALL
START
EDIT SET

TOTAL  0:00:00:00
SCENE  0
[MENU] : END
```

8



```
VIDEO EDIT     ▶II  0:09:07:06
MARK          2  IN
UNDO
ERASE ALL
START
EDIT SET

TOTAL  0:00:12:00
SCENE  1
[MENU] : END
```

9



```
VIDEO EDIT     ▶II  0:10:01:23
MARK          4  IN
UNDO
ERASE ALL
START
EDIT SET

TOTAL  0:00:47:12
SCENE  3
[MENU] : END
```

Erasing the program you have set

Erase OUT first and then IN of the last program.

(1) Turn the SEL / PUSH EXEC dial to select UNDO, then press the dial.
(2) Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
The last set program mark flashes, then the setting is canceled.

To cancel erasing

Select RETURN in step **(2)**.

Erasing all programs

(1) 350 351
Turn the SEL / PUSH EXEC dial to select TAPE in VIDEO EDIT, then press the dial.
150 250
Turn the SEL / PUSH EXEC dial to select VIDEO EDIT, then press the dial.
(2) Select ERASE ALL in the menu settings. Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
All the program marks flash, then the settings are canceled.

To cancel erasing all programs

Select RETURN in step **(2)**.

To cancel the program you have set

Press MENU.
The program is stored in memory until the tape is ejected.

Notes

- Digital program editing does not work with tapes recorded in the Hi8 Hi8/standard 8 mm 8 system.
- You cannot dub the title or display indicators. However, you can dub the title which has already been recorded on a tape.
- You cannot operate recording during Digital program editing on a tape.

You cannot set IN or OUT to the following portions of the tape:

– A portion recorded in Hi8 Hi8/standard 8 mm 8 system
– A blank portion of the tape

The total time may not be displayed correctly in the following cases:

– The tape is recorded in the Hi8 Hi8/standard 8 mm 8 system.
– There is a blank portion between IN and OUT on the tape.

Operation 2: Performing the program (Dubbing a tape)

Make sure that your camcorder and VCR are connected, and that the VCR is set to recording pause.
When you use an i.LINK cable, setting the VCR to recording pause is not necessary.
When you use a digital video camera recorder, set its power switch to VCR/VTR.

(1) 350 351
Select VIDEO EDIT in the menu settings. Turn the SEL/PUSH EXEC dial to select TAPE, then press the dial.
150 250
Turn the SEL/PUSH EXEC dial to select VIDEO EDIT, then press the dial.

(2) Select START in the menu settings. Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.
Your camcorder searches for the beginning of the first program, then starts dubbing.
The program mark flashes.
The SEARCH indicator appears during search, and the EDITING indicator appears during edit on the screen.
The program mark changes to light blue after dubbing ends.
When dubbing ends, your camcorder and the VCR automatically stop.
Then the display returns to the VIDEO EDIT initial screen.

To stop dubbing during editing

Press ■ on your camcorder.

To end the Digital program editing

Press MENU.

You cannot record on the VCR when:
– The cassette has run out of tape.
– The write-protect tab on the cassette is set to lock.
– The IR SETUP code is not correct (when IR is selected).
– The button to cancel recording pause is not correct (when IR is selected).

NOT READY appears on the screen when:
– The program to operate Digital program editing has not been made.
– i.LINK is selected but an i.LINK cable is not connected.
– The power of the connected VCR is not turned on (when i.LINK is selected).

Recording video or TV programs

150 250 350 351

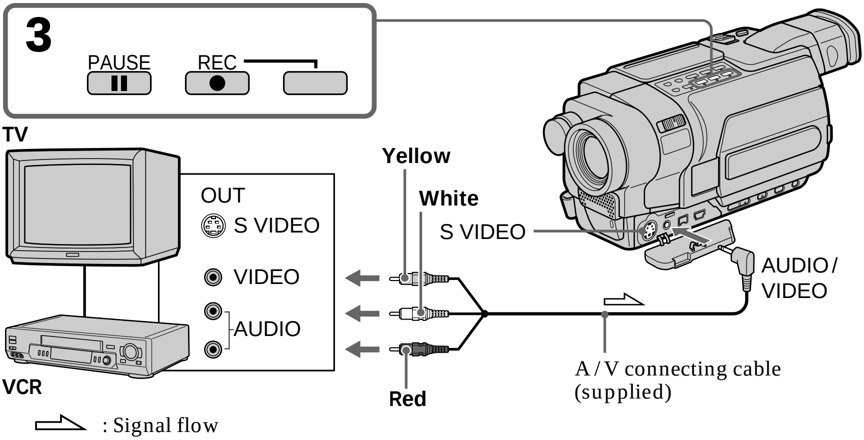
Using the A/V connecting cable 350 351

You can record a tape from another VCR or TV program from TV that has video/audio outputs. Use your camcorder as a recorder.

Before operation

Set DISPLAY to LCD in the menu settings. (The default setting is LCD.)

(1) Insert a tape for recording into your camcorder. If you want to record a tape from the VCR, insert a recorded tape into the VCR.
(2) Set the POWER switch to VCR on your camcorder.
(3) Press ● REC and the button on its right simultaneously on your camcorder, then immediately press ❚❚ on your camcorder.
(4) Press ► on the VCR to start playback if you record a tape from a VCR. Select a TV program if you record from TV.
The picture from the TV or VCR appears on the screen of your camcorder.
(5) Press ❚❚ on your camcorder at the scene where you want to start recording from.


3
PAUSE
REC
TV
OUT
S VIDEO
VIDEO
AUDIO
VCR
Yellow
White
S VIDEO
Red
AUDIO/VIDEO
A/V connecting cable (supplied)
: Signal flow

When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

Notes

- To enable smooth transition, we recommend that you do not mix pictures recorded in the Hi8 Hi8/standard 8 mm 8 with the Digital8 D8 system on a tape.
- If you do fast-forward or slow-playback on the other equipment, the image being recorded may fluctuate. When recording from other equipment, be sure to play back the original tape at normal speed.

If your VCR or TV is a monaural type

Connect the yellow plug of the A/V connecting cable to the video output jack and the white or the red plug to the audio output jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and when the red plug is connected, the right channel audio is output.

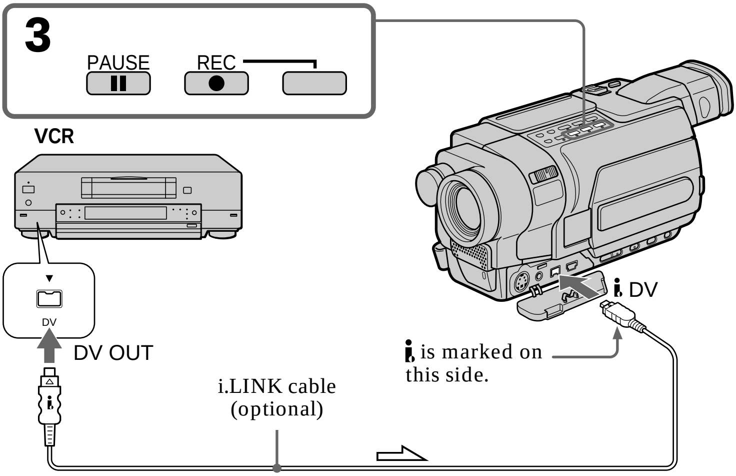
If your TV or VCR has an S video jack

Pictures can be reproduced more faithfully by using an S video cable (optional).
With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcorder and the TV or VCR.

Using the i.LINK cable 150 250 350 351

You can record a tape from a VCR that has DV outputs. Use your camcorder as a recorder.
Simply connect the i.LINK cable (optional) to i DV of your camcorder and to DV OUT of the DV products. With a digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing.

(1) Insert a blank tape for recording into your camcorder, and insert the recorded tape into the VCR.
(2) Set the POWER switch to VCR on your camcorder.
(3) Press ● REC and the button on its right simultaneously on your camcorder, then immediately press ❚❚ on your camcorder.
(4) Press ▶ on the VCR to start playback.
The picture to be recorded appears on the screen of your camcorder.
(5) Press ❚❚ on your camcorder at the scene where you want to start recording from.



⇨ : Signal flow

When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

You can connect one VCR only using the i.LINK cable.

When you dub a picture in digital form
The color of the display may be uneven. However, this does not affect the dubbed picture.

If you record a paused playback picture with the i DV jack

The recorded picture becomes rough. When you play back the picture using your camcorder, the picture may jitter.

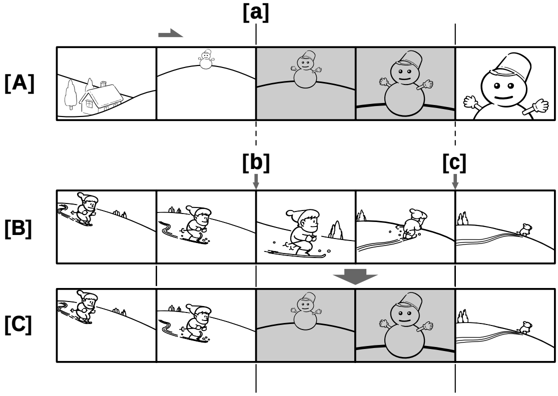
Before recording

Make sure that the DV IN indicator appears on the screen of your camcorder by pressing DISPLAY. The DV IN indicator may appear on both equipment.

Inserting a scene from a VCR – Insert Editing

250 **350** **351**

You can insert a new scene from a VCR onto your originally recorded tape by specifying the insert start and end points.
Use the Remote Commander for this operation.
Connections are the same as on page 119 and 121. Insert a cassette containing the desired scene into the VCR.



[A]: A tape that contains the scene to be superimposed (VCR)
[B]: A tape before editing (your camcorder)
[C]: A tape after editing (your camcorder)

(1) Set the POWER switch to VCR on your camcorder.

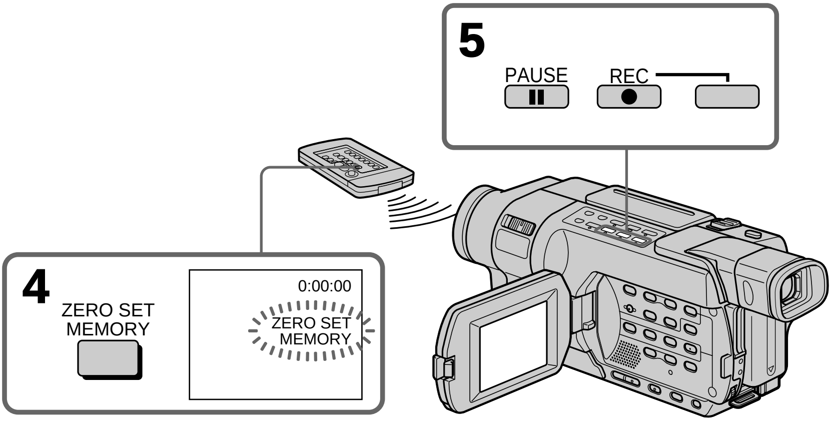
(2) On the connected VCR, locate just before the insert start point **[a]**, then press ❚❚ to set the VCR to the playback pause mode.

(3) On your camcorder, locate the insert end point **[c]** by pressing ◀◀ or ▶▶. Then press ❚❚ to set your camcorder to the playback pause mode.

(4) Press ZERO SET MEMORY on the Remote Commander. The ZERO SET MEMORY indicator flashes and the end point of the insert is stored in memory. The tape counter shows “0:00:00.”

(5) On your camcorder, locate the insert start point **[b]** by pressing ◀◀. Press ● REC and the button on its right simultaneously, then immediately press ❚❚ to set your camcorder to the recording pause mode.

(6) First press ❚❚ on the VCR, and after a few seconds press ❚❚ on your camcorder to start inserting the new scene.
Inserting automatically stops near the zero point on the counter. Your camcorder automatically stops. The end point **[c]** of the insert stored in memory is canceled.



To change the insert end point

Press ZERO SET MEMORY again after step **(5)** to make the ZERO SET MEMORY indicator disappear and begin from step **(3)**.

Notes

- The zero set memory function does not work with tapes recorded in the Hi8 Hi8/ standard 8 mm 8 system.
- Pictures and sound recorded on the section between the insert start and end points will be erased when you insert the new scene.
- If you use the Remote Commander when dubbing a tape, the VCR may operate accidentally. Should this happen, change the commander mode of the VCR to one other than VTR2, or cover the sensor of the VCR with black paper.

If you insert scenes on the tape recorded on another camcorder

The pictures and sound may be distorted. We recommend that you insert scenes on a tape recorded on your camcorder.

When the inserted picture is played back

Pictures and sound may be distorted at the end of the inserted section. This is not a malfunction.

Pictures and sound at the start point and the end point may be distorted in the LP mode.

To insert a scene without setting the insert end point

Skip step **(3)** and **(4)**. Press ■ when you want to stop inserting.

Using a "Memory Stick" – Introduction

350 351

You can record and play back images on a "Memory Stick." You can easily play back, record or delete images. You can exchange image data with other equipment such as your computer, etc., using the USB cable for a "Memory Stick" (p. 182).
See page 240 for details of "Memory Stick."

On file format (DCF compliant)

Still image: Exif * Ver.2.2 JPEG compliant, DPOF compatible
Moving picture: MPEG1 compliant (monaural)

* Exif: Exif is a file format for still images, established by the Japan Electronics and Information Technology Industries Association (JEITA). Files in this format can have additional information such as your camcorder's setting information at the time of recording.

Typical image data file name

Still image
101 (up to 999)-0001: This file name appears on the screen of your camcorder.
Dsc00001.jpg: This file name appears on the display of your computer.

Moving picture
MOV00001: This file name appears on the screen of your camcorder.
Mov00001.mpg: This file name appears on the display of your computer.

"Memory Stick" formatted on computer

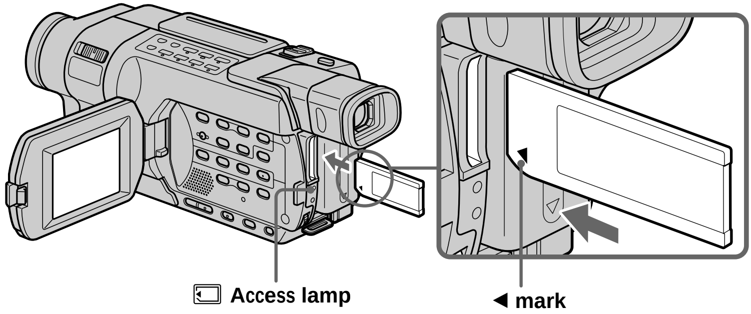
A "Memory Stick" formatted on Windows OS or Macintosh OS is not guaranteed to be compatible with your camcorder.

Notes on image data compatibility

- Image data files recorded on a "Memory Stick" by your camcorder conform with the Design Rule for Camera File System universal standard established by the JEITA (Japan Electronics and Information Technology Industries Association). You cannot play back on your camcorder images recorded on other equipment (DCR-TRV890E/TRV900/TRV900E or DSC-D700/D770) that does not conform with this universal standard. (These models are not sold in some areas.)
- If you cannot use the "Memory Stick" that is used with other equipment, format it with your camcorder (p. 218). However, formatting erases all information on the "Memory Stick."
- You may not be able to play back the images recorded using your camcorder, on other playback equipment.
- You may not be able to play back following images with your camcorder:
  - image data modified on a computer
  - image data shot with other equipment

Inserting a “Memory Stick”

Insert a “Memory Stick” in the “Memory Stick” slot as far as it can go with the ◄ mark facing the LCD panel as illustrated.



Ejecting the “Memory Stick”

Press the “Memory Stick” once lightly.

When the access lamp is lit or flashing
Do not shake or knock your camcorder because your camcorder is reading the data from the “Memory Stick” or recording the data on the “Memory Stick.” Do not turn the power off, eject the “Memory Stick” or remove the battery pack. Otherwise, image data may become damaged.

If “⊠ MEMORY STICK ERROR” is displayed
Reinsert “Memory Stick” a few times. The “Memory Stick” may be damaged if the indicator is still displayed. If this occurs, use another “Memory Stick.”

If the write-protect tab on a “Memory Stick” is set to LOCK
“⊠ ⊶” appears and functions using the “Memory Stick” do not work.

Selecting the still image quality mode

You can select the image quality mode in still image recording. The default setting is FINE.

(1) Set the POWER switch to VCR or MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.

(2) Press MENU to display the menu settings.

(3) Turn the SEL / PUSH EXEC dial to select STILL SET in 1, then press the dial.

(4) Turn the SEL / PUSH EXEC dial to select QUALITY, then press the dial.

(5) Turn the SEL / PUSH EXEC dial to select the desired image quality, then press the dial.

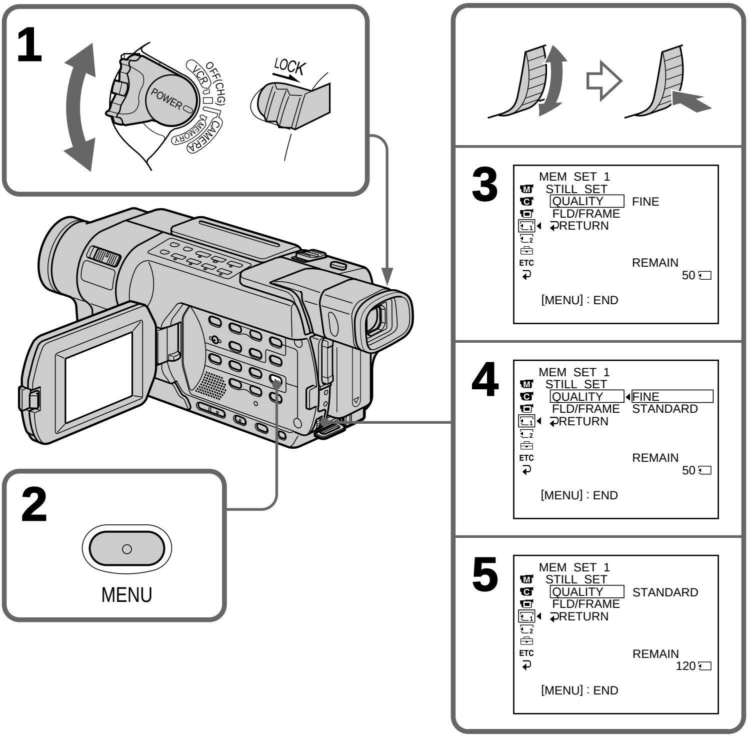

1
POWER
OFF(CHG)
VCR
CAMERA
MEMORY
LOCK
2
MENU
3
MEM SET 1
STILL SET
QUALITY FINE
FLD/FRAME
RETURN
ETC
REMAIN
50
[MENU] : END
4
MEM SET 1
STILL SET
QUALITY FINE
FLD/FRAME STANDARD
RETURN
ETC
REMAIN
50
[MENU] : END
5
MEM SET 1
STILL SET
QUALITY STANDARD
FLD/FRAME
RETURN
ETC
REMAIN
120
[MENU] : END

Image quality settings

Setting	Meaning
FINE (FINE)	Use this mode when you want to record high quality images. The number of still images that can be recorded on a "Memory Stick" becomes less than the number when recorded in STANDARD. Fine images are compressed to about 1/4.
STANDARD (STD)	This is the standard image quality. Standard images are compressed to about 1/10.

Note

In some cases, changing the image quality mode may not affect the image quality, depending on the types of images you are shooting.

Differences in image quality mode

Recorded images are compressed in JPEG format before being stored into memory. The memory capacity allocated to each image varies depending on the selected image quality mode. Details are shown in the table below.

Image quality mode	Memory capacity
FINE	About 150 KB
STANDARD	About 60 KB

Image quality mode indicator

The image quality mode indicator is not displayed during playback.

When you select image quality

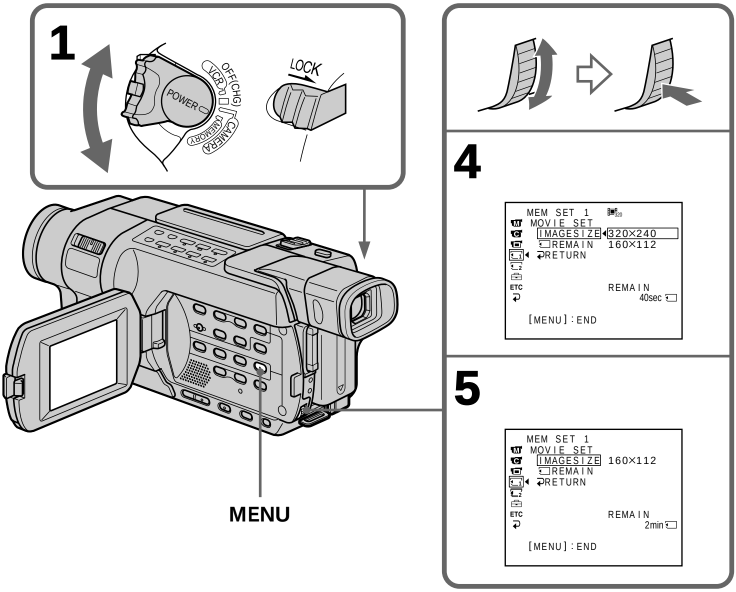
The number of images you can shoot in the currently selected image quality appears on the screen.

Selecting the moving picture size

You can select either of two image sizes 320 × 240 or 160 × 112.
(The default setting is 320 × 240.)

(1) Set the POWER switch to VCR or MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu settings.
(3) Turn the SEL / PUSH EXEC dial to select MOVIE SET in ▭1, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select IMAGESIZE, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select the desired image size, then press the dial.
The indicator changes as follows:

▣320 ↔ ▣160



```
MEM SET 1          ▣320
MOVIE SET
  IMAGESIZE ◀320×240
  ▭REMAIN    160×112
  ↩RETURN

                 REMAIN
                   40sec ▭
  [MENU] : END
```

```
MEM SET 1
MOVIE SET
  IMAGESIZE  160×112
  ▭REMAIN
  ↩RETURN

                 REMAIN
                    2min ▭
  [MENU] : END
```

The still image size
The still image size is 640 × 480 only.

Moving picture size settings

Setting	Meaning	Indicator
320 × 240	Records 320 × 240 moving pictures.	▣320
160 × 112	Records 160 × 112 moving pictures.	▣160

Approximate number of still images you can record on a “Memory Stick”

The number of images you can record varies depending on which image quality you select and the complexity of the subject.

Image quality	**Type of the “Memory Stick”**				
	8MB (supplied)*1) (optional)*2)	16MB (optional)	32MB (optional)	64MB (optional)	128MB (optional)
FINE	50 images	96 images	190 images	390 images	780 images
STANDARD	120 images	240 images	485 images	980 images	1970 images

Approximate time of moving pictures you can record on a “Memory Stick”

The time of moving pictures you can record varies depending on which image size you select and the complexity of the subject.

Image size	**Type of the “Memory Stick”**				
	8MB (supplied)*1) (optional)*2)	16MB (optional)	32MB (optional)	64MB (optional)	128MB (optional)
320 × 240	1 min. 20 sec.	2 min. 40 sec.	5 min. 20 sec.	10 min. 40 sec.	21 min. 20 sec.
160 × 112	5 min. 20 sec.	10 min. 40 sec.	21 min. 20 sec.	42 min. 40 sec.	85 min. 20 sec.

The tables above show approximate number of still images and times of moving pictures you can record on a “Memory Stick” formatted on your camcorder.

When available recording time is not left on the “Memory Stick”
“⊠ FULL” appears.

*1) 351
*2) 350

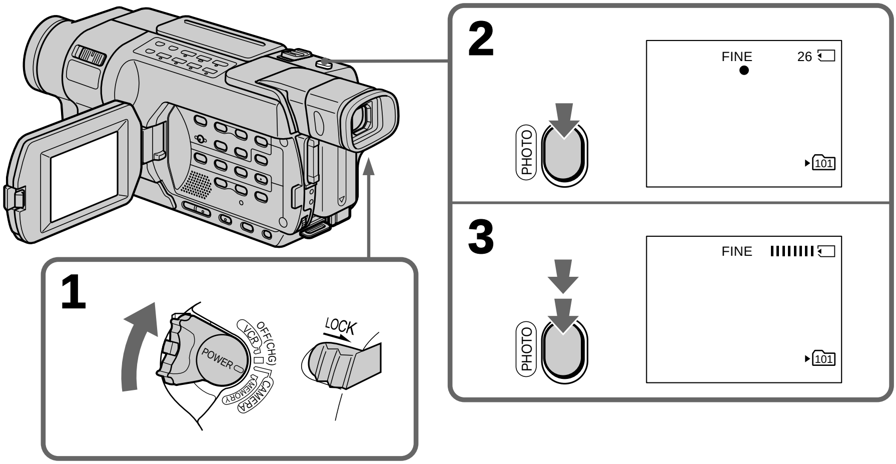
Recording still images on a "Memory Stick" – Memory Photo recording

350 351

You can record still images on a "Memory Stick."
You can select the FIELD or FRAME mode in still image recording. Your camcorder compensates for camera-shake when recording moving subjects in the FIELD mode. Your camcorder records in high quality in the FRAME mode. Select the FIELD or FRAME in the menu settings (p. 217). (The default setting is FIELD.)

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Keep pressing PHOTO lightly until the desired still image appears. The green ● mark stops flashing, then lights up. The brightness of the image and focus are adjusted and fixed while your camcorder targets at the middle of the image. Recording does not start yet.
(3) Press PHOTO deeper. The shutter sounds, and the image becomes still. Recording is complete when the bar scroll indicator disappears.
The image when you pressed PHOTO deeper will be recorded on the "Memory Stick."



You can record still images on a "Memory Stick" in CAMERA mode.

For details, see page 53.

Notes

- When recording fast-moving subjects in the FRAME mode, the recorded image appears blurry.
- When recording in the FRAME mode, your camcorder may not correct camera-shake. We recommend that you shoot objects with a tripod.

When the POWER switch is set to MEMORY

The following functions do not work:
– Wide mode
– Fader
– Super NightShot
– Color Slow Shutter
– Picture effect
– Digital effect
– Titles

While you are recording a still image

You can neither turn off the power nor press PHOTO.

When you press PHOTO on the Remote Commander

Your camcorder immediately records the image that is on the screen when you press the button.

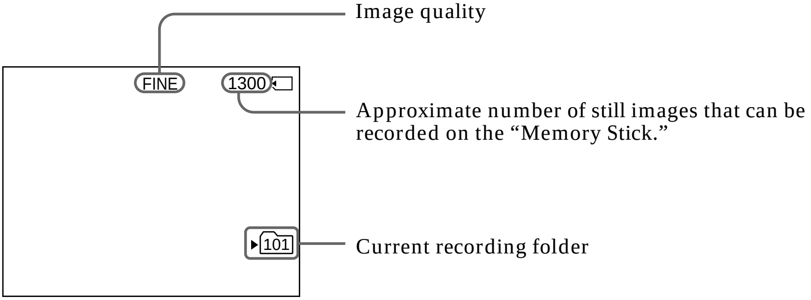
When you press PHOTO lightly in step (2)

The image momentarily flickers. This is not a malfunction.

Data code

The data code (date/time or various settings when recorded) are not displayed while recording. However, they are recorded automatically onto the "Memory Stick."
To display the data code, press DATA CODE on the Remote Commander during playback.

Screen indicators during still image recording


FINE
1300
101
Image quality
Approximate number of still images that can be recorded on the “Memory Stick.”
Current recording folder

Notes

- The current recording folder indicator shows the folder in which images are recorded.
- The number of images can be recorded on a “Memory Stick” is displayable up to 9999. Even if the “Memory Stick” has a capacity of 10 000 images or more, it is still displayed as >9999.

The indication of the number of recordable still images

Depending on the image quality setting and the complexity of the subject, the indication of the remaining number of recordable still images may not change even after you record an image.

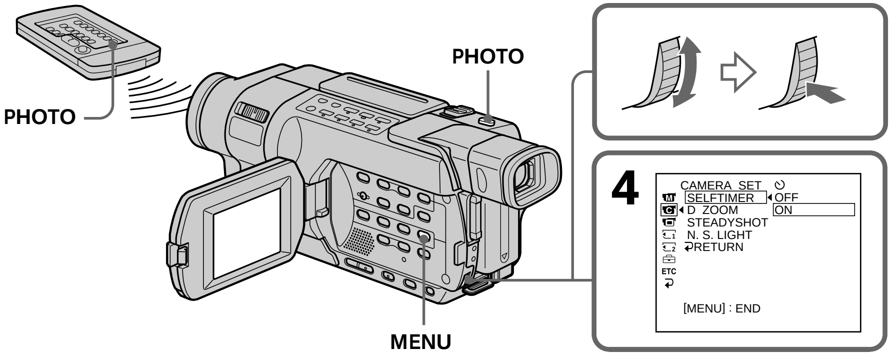
In CAMERA or VCR mode

- The current recording folder indicator is displayed for about five seconds in the following cases:
  - When a “Memory Stick” is inserted
  - When the POWER switch is set to another position
- The current recording folder indicator is displayed while your camcorder is capturing an image or recording a still image on a “Memory Stick.”
  The current recording folder indicator takes priority over the 16 BIT indicator (audio mode) when it is displayed.

Self-timer memory photo recording

You can record still images on “Memory Stick”s with the self-timer. You can also use the Remote Commander for this operation.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu settings.
(3) Turn the SEL / PUSH EXEC dial to select SELFTIMER in , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(5) Press MENU to make the menu settings disappear.
The ⏲ (self-timer) indicator appears on the screen.
(6) Press PHOTO deeper.
Self-timer starts counting down from 10 with a beep. In the last two seconds of the countdown, the beep gets faster, then recording starts automatically.



To cancel self-timer

Set SELFTIMER to OFF in the menu settings while your camcorder is in the standby mode. You cannot cancel self-timer with the Remote Commander.

Note

The self-timer is automatically canceled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF (CHG) or VCR.

Recording images from a tape as still images

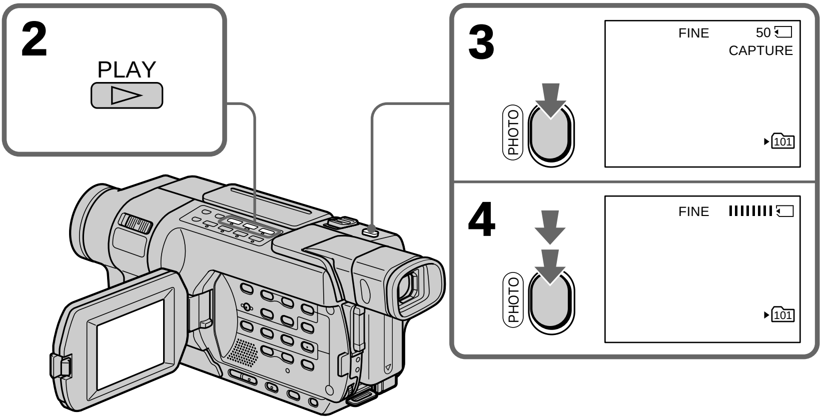
350 **351**

Your camcorder can read moving picture data recorded on a tape in the Digital8 system, and record it as a still image on a “Memory Stick.”
Your camcorder can also capture moving picture data through the input connector and record it as a still image on a “Memory Stick.”

Before operation

- Insert a tape recorded in the Digital8 system into your camcorder.
- Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to VCR.
(2) Press ►. Moving pictures recorded on the tape are played back.
(3) Keep pressing PHOTO lightly until the picture from the tape freezes.
The CAPTURE indicator appears on the screen. Recording does not start yet.
To change the still image, release PHOTO and select a still image again.
(4) Press PHOTO deeper. Recording is complete when the bar scroll indicator disappears. The image displayed on the screen when you pressed PHOTO deeper will be recorded on the “Memory Stick.” Playback of the tape is resumed.



When the access lamp is lit or flashing

Do not shake or knock the unit. Also do not turn the power off, eject the “Memory Stick” or remove the battery pack. Otherwise, image data may become damaged.

If the ⊠ indicator appears on the screen

The inserted “Memory Stick” is incompatible with your camcorder because its format does not conform with your camcorder. Check the format of the “Memory Stick.”

If you press PHOTO lightly in the playback mode

Your camcorder stops momentarily.

Sound recorded on a tape

You cannot record audio from a tape.

When you press PHOTO on the Remote Commander

Your camcorder immediately records the image that is on the screen when you press the button.

Titles superimposed on tapes

You cannot record titles on the “Memory Stick.” However, you can record titles which have already been recorded on tapes.

Data code

The data code (date/time) when it is recorded on the “Memory Stick” from a tape is recorded.
The data code (various settings) is not recorded.
The data codes recorded on a tape are not recorded.

While recording images from a tape as still images

The image is recorded in the FRAME mode automatically even if you select FIELD in the menu settings.

Recording folder

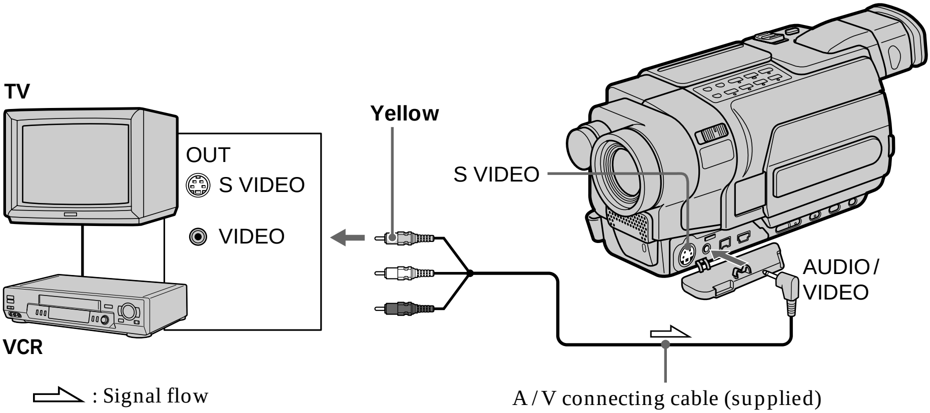
You cannot change the recording folder.
The recording folder you selected when the POWER switch was set to MEMORY is used (p. 162).

Recording a still image from external equipment

Before operation
Set DISPLAY to LCD in the menu settings. (The default setting is LCD.) (p. 222)

(1) Set the POWER switch to VCR.
(2) Play back the recorded tape, or turn the TV on to see the desired program.
The picture from TV or VCR appears on the screen of your camcorder.
(3) Follow steps **(3)** and **(4)** on page 136.

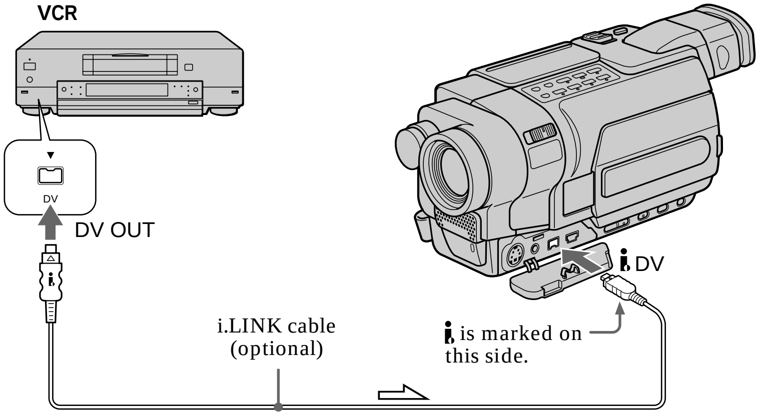
Using the A/V connecting cable


TV
OUT
S VIDEO
VIDEO
VCR
Yellow
S VIDEO
AUDIO/VIDEO
: Signal flow
A/V connecting cable (supplied)

Connect the yellow plug of the A/V connecting cable to the video output jack on the VCR or the TV.

If your TV or VCR has an S video jack
Pictures can be reproduced more faithfully by using an S video cable (optional).
With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcorder and the TV or VCR.

Using the i.LINK cable



⇨ : Signal flow

Note

In the following instances, "▭ REC ERROR" is displayed and recording is not possible. Record distortion-free images:

– When recording on a tape in a poor recording state, for example, on a tape that has been repeatedly used for dubbing.

– Between scenes or in the various playback modes on the tape recorded in Hi8 Hi8/ standard 8 mm 8 system.

– When attempting to input images that are distorted due to poor radio wave reception when a TV tuner unit is in use.

Superimposing a still image in the "Memory Stick" on an image – MEMORY MIX

350 351

You can superimpose a still image you have recorded on the "Memory Stick" on the moving picture you are recording. You can record the superimposed images on a tape or a "Memory Stick" as still images.

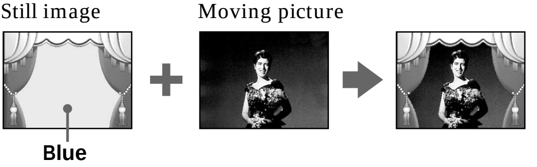
M. CHROM (memory chroma key)
You can swap only the blue area of a still image, such as an illustration or a frame, with a moving picture.

M. LUMI (memory luminance key)
You can swap a brighter area of a still image, such as a handwritten illustration or a title, with a moving picture. Recording a title on the "Memory Stick" before a trip or event is recommended.

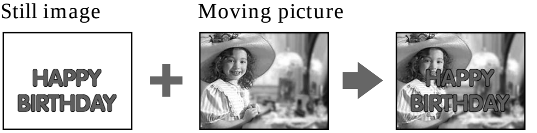
C. CHROM (camera chroma key)
You can superimpose a moving picture on a still image such as an image that can be used as background. Shoot the subject against a blue background. Only the blue area of the moving image will be swapped with the still image.

M. OVERLAP * (memory overlap)
You can make a moving picture fade in on top of a still image recorded on the "Memory Stick" as the overlap function.

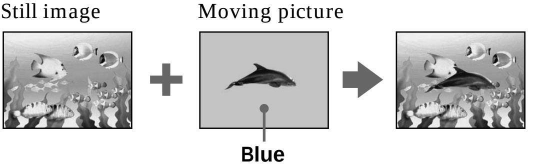
M. CHROM


Still image
Moving picture
Blue

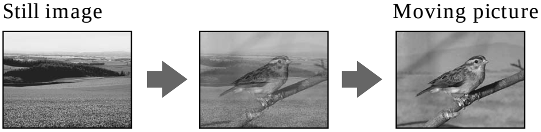
M. LUMI


Still image
Moving picture
HAPPY BIRTHDAY
HAPPY BIRTHDAY

C. CHROM


Still image
Moving picture
Blue

M. OVERLAP *


Still image
Moving picture

* The superimposed image using M. OVERLAP can be recorded on tapes only.

Superimposing a still image in the “Memory Stick” on an image – MEMORY MIX

Recording superimposed images on a tape

Before operation

- Insert a tape for recording into your camcorder.
- Insert a “Memory Stick” containing still images into your camcorder.

(1) Set the POWER switch to CAMERA.

(2) In the standby mode, press MEMORY MIX.
The first recorded image appears in the bottom-right corner of the screen as a thumbnail image. The last image that is used in MEMORY MIX will be displayed next time.

(3) Press MEMORY+/– to select the still image you want to superimpose.
– : To see the previous image
+ : To see the next image

(4) Turn the SEL/PUSH EXEC dial to select the desired mode.
The mode changes as follows:
M. CHROM ←→ M. LUMI ←→ C. CHROM ←→ M. OVERLAP

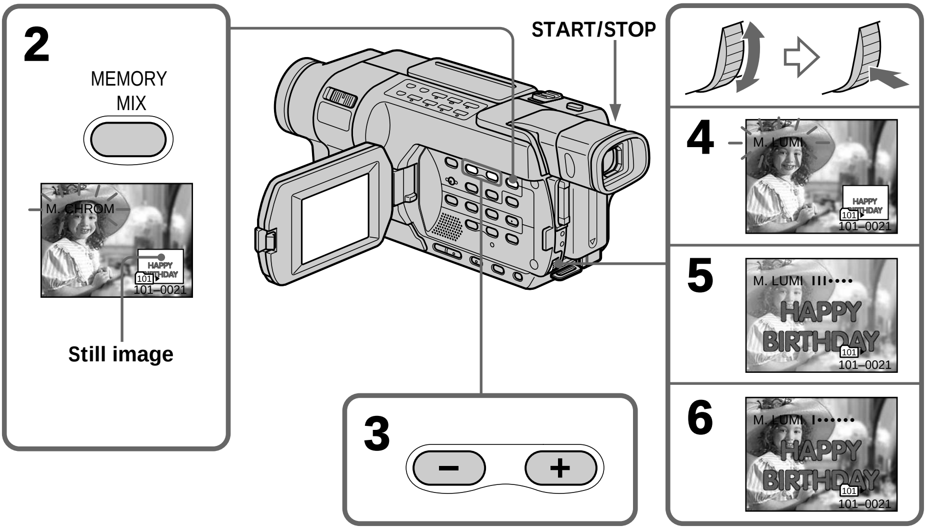
(5) Press the SEL/PUSH EXEC dial.
The still image overlaps with the picture on the screen.

(6) Turn the SEL/PUSH EXEC dial to adjust the effect.

M. CHROM	– The degree of the blue areas in the still image which is to be swapped with a moving picture
M. LUMI	– The brightness of the area in the still image which is to be swapped with a moving picture
C. CHROM	– The degree of the blue areas in the moving picture which is to be swapped with a still image
M. OVERLAP	– No adjustment necessary

The fewer bars there are on the screen, the stronger the effect becomes.

(7) Press START/STOP to start recording.


2
MEMORY MIX
M. CHROM
HAPPY BIRTHDAY
101
101–0021
Still image
START/STOP
3
–
+
4
M. LUMI
HAPPY BIRTHDAY
101
101–0021
5
M. LUMI III••••
HAPPY BIRTHDAY
101
101–0021
6
M. LUMI I••••••
HAPPY BIRTHDAY
101
101–0021

To change the still image to superimpose

Do either of the following:

– Press MEMORY+/– before step **(7)**.

– Press the SEL/PUSH EXEC dial before step **(7)**, and repeat the procedure from step **(3)**.

To change the mode setting

Press the SEL/PUSH EXEC dial before step **(7)**, and repeat the procedure from step **(4)**.

To cancel MEMORY MIX

Press MEMORY MIX.

Notes

- You cannot use MEMORY MIX for moving pictures recorded on a "Memory Stick."
- When the overlapping still image has a large amount of white, the thumbnail image of the picture may not be clear.

Image data modified on your computer or shot with other equipment

You may not be able to play modified images back with your camcorder.

When you select M. OVERLAP

You cannot change the still image or the metal setting.

During recording

You cannot change the mode setting.

Sample images

- The "Memory Stick" supplied with your camcorder is already stored with the protected 20 images 351 :
  - For M. CHROM: 18 images (such as a frame) 101-0001 to 101-0018
  - For C. CHROM: two images (such as a background) 101-0019 to 101-0020
- The CD-ROM supplied with your camcorder is already stored with 20 images (p. 191):
  - For M. CHROM: 18 images (such as a frame) DSC 00001 to DSC 00018
  - For C. CHROM: two images (such as a background) DSC 00019 to DSC 00020

Recording superimposed images on a “Memory Stick” as a still image

Before operation

Insert a “Memory Stick” containing still images into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.

(2) Press MEMORY MIX.
The first recorded image appears in the bottom-right corner of the screen as a thumbnail image. The last image that is used in MEMORY MIX will be displayed next time.

(3) Press MEMORY+/– to select the still image you want to superimpose.
– : To see the previous image
+ : To see the next image

(4) Turn the SEL/PUSH EXEC dial to select the desired mode.
The mode changes as follows:
M. CHROM ←→ M. LUMI ←→ C. CHROM

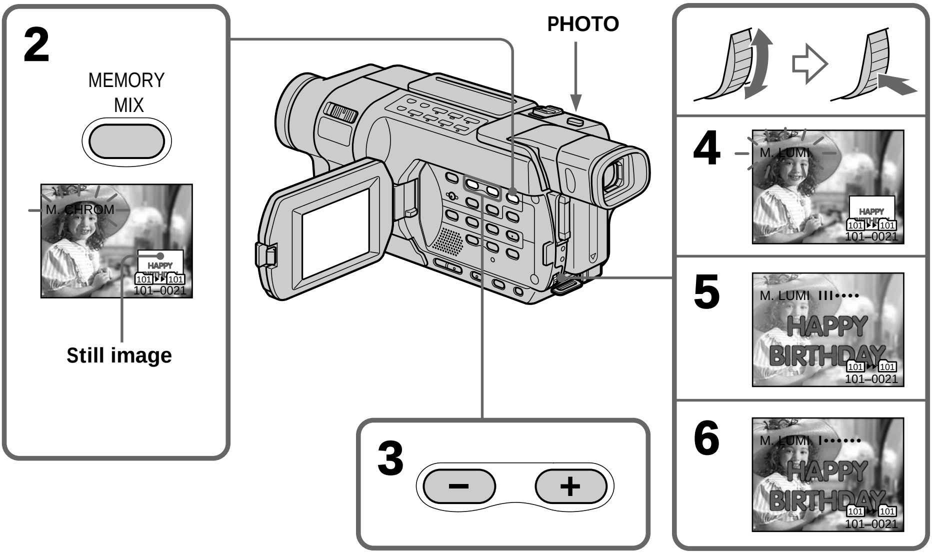
(5) Press the SEL/PUSH EXEC dial.
The still image overlaps with the picture on the screen.

(6) Turn the SEL/PUSH EXEC dial to adjust the effect.

M. CHROM	– The degree of the blue areas in the still image which is to be swapped with a moving picture
M. LUMI	– The brightness of the area in the still image which is to be swapped with a moving picture
C. CHROM	– The degree of the blue areas in the moving picture which is to be swapped with a still image

The fewer bars there are on the screen, the stronger the effect becomes.

(7) Press PHOTO deeply to start recording.
The image displayed on the screen will be recorded on a “Memory Stick.” Recording is complete when the bar scroll indicator disappears.


2
MEMORY MIX
M. CHROM
HAPPY BIRTHDAY
101 ▸▸ 101
101–0021
Still image
PHOTO
3
–
+
4
M. LUMI
5
M. LUMI III••••
6
M. LUMI I••••••

To change the still image to superimpose

Do either of the following:

– Press MEMORY+/– before step **(7)**.

– Press the SEL/PUSH EXEC dial before step **(7)**, and repeat the procedure from step **(3)**.

To change the mode setting

Press the SEL/PUSH EXEC dial before step **(7)**, and repeat the procedure from step **(4)**.

To cancel MEMORY MIX

Press MEMORY MIX.

Notes

- You cannot use MEMORY MIX for moving pictures recorded on a “Memory Stick.”
- When the overlapping still image has a large amount of white, the thumbnail image of the picture may not be clear.

Image data modified on your computer or shot with other equipment

You may not be able to play modified images back with your camcorder.

During recording

You cannot change the mode setting.

When using MEMORY MIX in MEMORY mode

The PROGRAM AE function does not work. (The indicator flashes.)

Recording folder

You cannot change the recording folder.
The recording folder you selected when the POWER switch was set to MEMORY is used (p. 162).

Sample images

- The “Memory Stick” supplied with your camcorder is already stored with the protected 20 images 351 :
  - For M. CHROM: 18 images (such as a frame) 101-0001 to 101-0018
  - For C. CHROM: two images (such as a background) 101-0019 to 101-0020
- The CD-ROM supplied with your camcorder is already stored with 20 images (p. 191):
  - For M. CHROM: 18 images (such as a frame) DSC 00001 to DSC 00018
  - For C. CHROM: two images (such as a background) DSC 00019 to DSC 00020

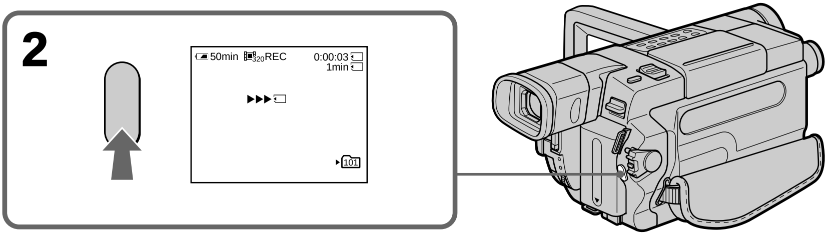
Recording moving pictures on a “Memory Stick” – MPEG movie recording

350 351

You can record moving pictures with sound on a “Memory Stick.”
The picture and sound are recorded up to the full capacity of a “Memory Stick” (MPEG MOVIE EX).

Before operation
Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press START/STOP. Your camcorder starts recording. The camera recording lamp lights up.
The picture and sound are recorded up to the capacity of a “Memory Stick.”
For more information about recording time, see page 131.



To stop recording

Press START/STOP.

Notes
- Sound is recorded in monaural.
- The moving picture files recorded on your camcorder cannot be played back on other camcorders without the folder creation function.

When the POWER switch is set to MEMORY
The following functions do not work:
– Wide mode
– Super NightShot
– Color Slow Shutter
– Fader
– Picture effect
– Digital effect
– Titles

When using an external flash (optional)

Turn the power of the external flash off when recording moving pictures on a "Memory Stick."
Otherwise, the charging sound for the flash may be recorded.

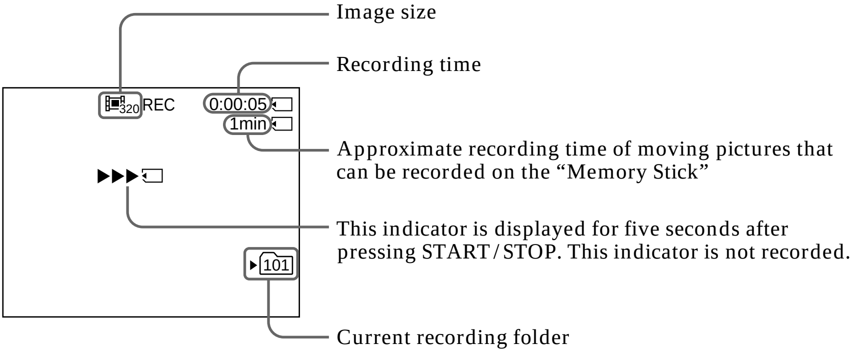
Data code

The data code (date/time) are not displayed while recording. However, they are automatically recorded onto the "Memory Stick."
To display the data code (date/time), press DATA CODE on the Remote Commander during playback.
The data code (various settings) cannot be recorded.

During recording on "Memory Stick"

Do not eject the cassette tape from your camcorder. While ejecting the tape, the sound is recorded on the "Memory Stick."

Screen indicators during MPEG movie recording


320 REC
0:00:05
1min
101
Image size
Recording time
Approximate recording time of moving pictures that can be recorded on the “Memory Stick”
This indicator is displayed for five seconds after pressing START/STOP. This indicator is not recorded.
Current recording folder

Note

The current recording folder indicator indicates the folder in which images are recorded.

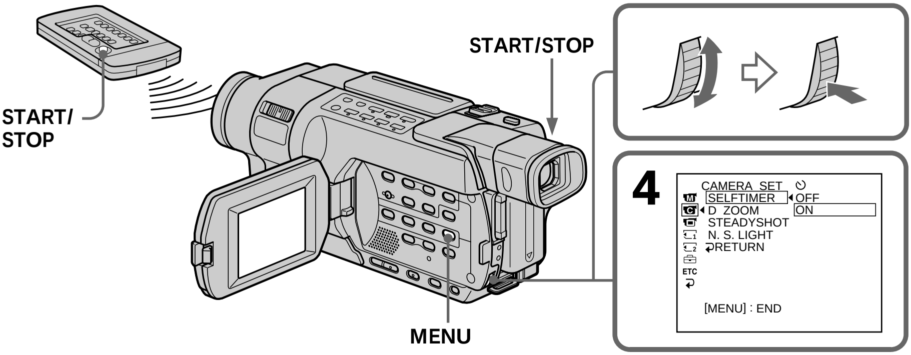
In VCR mode

- The current recording folder indicator is displayed for about five seconds in the following cases:
  - When a “Memory Stick” is inserted
  - When the POWER switch is set to another position
- The current recording folder indicator is displayed while your camcorder is recording a moving picture on a “Memory Stick.”

Self-timer MPEG movie recording

You can record moving pictures on a “Memory Stick” with the self-timer. You can also use the Remote Commander for this operation.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu settings.
(3) Turn the SEL/PUSH EXEC dial to select SELFTIMER in C, then press the dial.
(4) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
(5) Press MENU to make the menu settings disappear.
The ⏲ (self-timer) indicator appears on the screen.
(6) Press START/STOP.
Self-timer starts counting down from 10 with a beep. In the last two seconds of the countdown, the beep gets faster, then recording starts automatically.



To stop the countdown

Press START/STOP. To restart the countdown, press START/STOP again.

To cancel self-timer

Set SELFTIMER to OFF in the menu settings in the standby mode. You cannot cancel self-timer with the Remote Commander.

Note

The self-timer is automatically canceled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF (CHG) or VCR.

Recording pictures from a tape as a moving picture

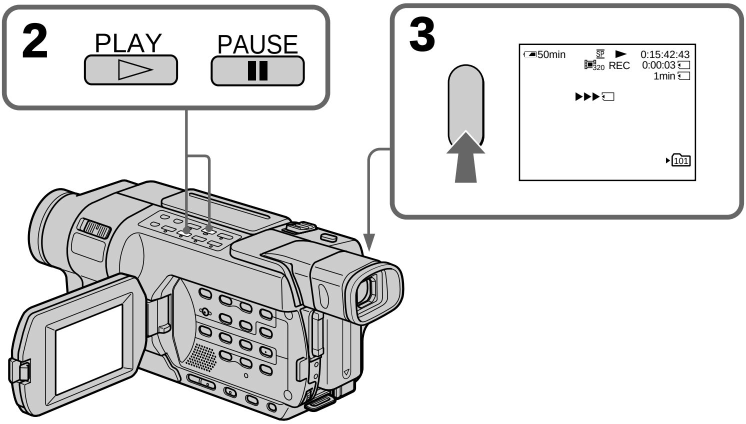
350 351

Your camcorder can read moving picture data recorded on tapes and record it as a moving picture on a "Memory Stick." Your camcorder can also capture moving picture data through the input connector and record it as a moving picture on a "Memory Stick."
The picture and sound are recorded up to the full capacity of a "Memory Stick" (MPEG MOVIE EX).

Before operation

- Insert a recorded tape into your camcorder.
- Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to VCR.
(2) Press ►. The picture recorded on the tape is played back.
And press ❚❚ at the scene where you want to start recording from.
(3) Press START/STOP on your camcorder.
Images and sound are recorded up to the remaining capacity of the "Memory Stick." For more information about recording time, see page 131.



To stop recording

Press START/STOP.

Notes
- Sound recorded in 48 kHz is converted to 32 kHz sound when recording pictures from a tape to a “Memory Stick.”
- Sound recorded in stereo is converted to monaural sound when recording from a tape.
- The moving picture files recorded on your camcorder cannot be played back on other camcorders without the folder creation function.

When the access lamp is lit or flashing
Do not shake or knock your camcorder. Also, do not set the POWER switch to OFF, eject a “Memory Stick” or remove the battery pack. Otherwise, image data may become damaged.

Titles
You cannot record titles on the “Memory Stick.” However, you can record titles which have already been recorded on tapes.

Data code
The data code (date/time) when it is recorded on the “Memory Stick” from a tape is recorded.
The data code (various settings) is not recorded.
The data codes recorded on a tape are not recorded.

If “ AUDIO ERROR” is displayed
Sound that cannot be recorded by your camcorder has been recorded on the tape. Connect external equipment with the A/V connecting cable and input images played back on it (p. 152).

The picture may be recorded on the “Memory Stick” incorrectly if:
– You turn the POWER switch during recording.
– You press any video control buttons during recording.
– Between the scenes recorded in the Digital8 system and in the Hi8 Hi8/standard 8 mm 8 system.
– A blank portion of the tape.
– The scenes when the input signal is cut off.

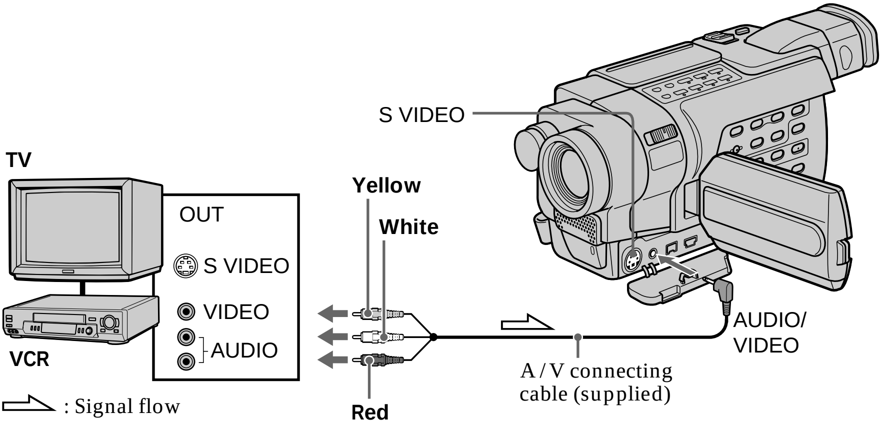
Recording folder
You cannot change the recording folder.
The recording folder you selected when the POWER switch was set to MEMORY is used (p. 162).

Recording a moving picture from external equipment

Before operation
Set DISPLAY to LCD in the menu settings. (The default setting is LCD.)

(1) Set the POWER switch to VCR.
(2) Play back the recorded tape, or turn the TV on to see the desired program. The picture of the other equipment is displayed on the screen or viewfinder.
(3) Press START/STOP at the point where you want to start recording from. Images and sound are recorded up to the remaining capacity of the "Memory Stick." For more information about recording time, see page 131.

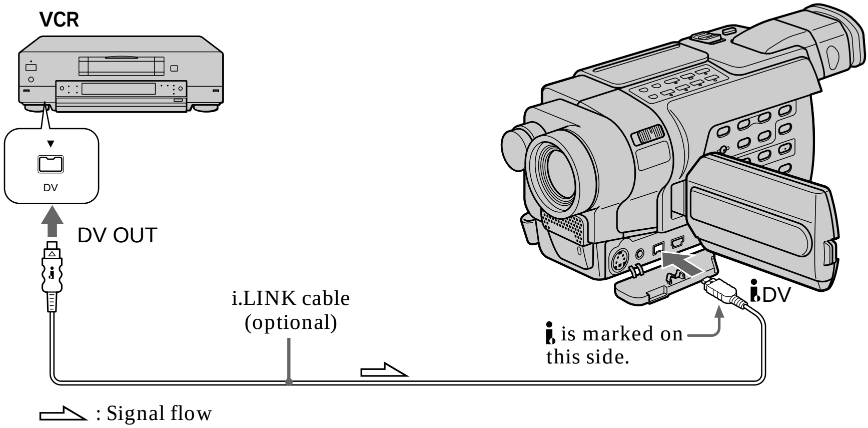
Using the A/V connecting cable



If your VCR or TV is a monaural type
Connect the yellow plug of the A/V connecting cable to the video output jack and the white or the red plug to the audio output jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and when the red plug is connected, the right channel audio is output.

If your TV or VCR has an S video jack
Pictures can be reproduced more faithfully by using an S video cable (optional).
With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcorder and the TV or VCR.

Using the i.LINK cable



Note

In the following instances, recording is discontinued or “▭ REC ERROR” is displayed and image data is not saved:

- – When recording on a tape in a poor recording state, for example, on a tape that has been repeatedly used for dubbing.
- – Between scenes or in the various playback modes on the tape recorded in Hi8 Hi8/ standard 8 mm 8 system.
- – When attempting to input images that are distorted due to poor radio wave reception when a TV tuner unit is in use.
- – When the input signal is cut off.

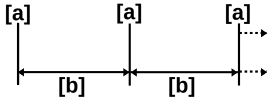
During recording on “Memory Stick”

Do not eject the cassette tape from your camcorder. During ejecting of the tape, the sound is recorded on the “Memory Stick.”

Interval Photo recording

350 351

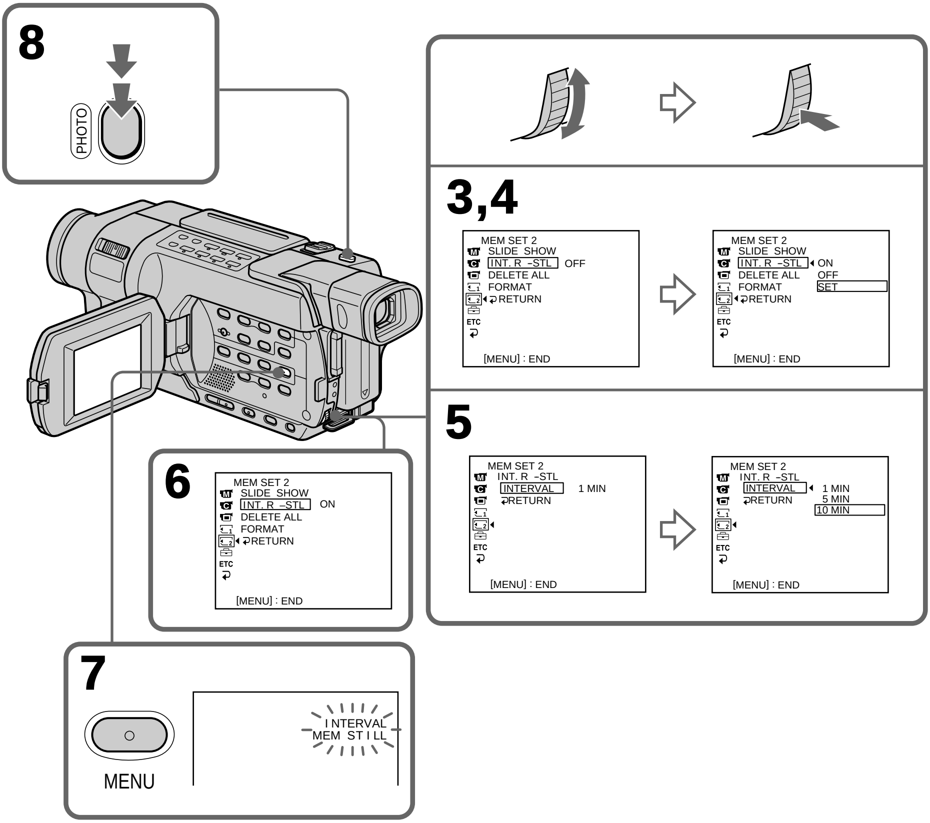
You can take photos successively at regular intervals. You can achieve an excellent recording for flowering, emergence, etc., with this function.
Each recording makes each still image file.



[a]: Recording
[b]: Interval time (INTERVAL)

Before operation
Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu settings.
(3) Turn the SEL / PUSH EXEC dial to select INT.R -STL in , then press the dial (p. 218).
(4) Turn the SEL / PUSH EXEC dial to select SET, then press the dial.
(5) Set INTERVAL.
  ① Turn the SEL / PUSH EXEC dial to select INTERVAL, then press the dial.
  ② Turn the SEL / PUSH EXEC dial to select the desired interval time, then press the dial.
  The time: 1MIN ←→ 5MIN ←→ 10MIN
  ③ Turn the SEL / PUSH EXEC dial to select ↩ RETURN, then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(7) Press MENU to make the menu settings disappear. The INTERVAL MEM STILL indicator flashes.
(8) Press PHOTO deeper to start interval photo recording. The INTERVAL MEM STILL indicator lights up.


8
PHOTO
3,4
MEM SET 2
SLIDE SHOW
INT. R -STL OFF
DELETE ALL
FORMAT
RETURN
ETC
[MENU] : END
MEM SET 2
SLIDE SHOW
INT. R -STL ON
DELETE ALL OFF
FORMAT SET
RETURN
[MENU] : END
5
MEM SET 2
INT. R -STL
INTERVAL 1 MIN
RETURN
[MENU] : END
MEM SET 2
INT. R -STL
INTERVAL 1 MIN
5 MIN
10 MIN
RETURN
[MENU] : END
6
MEM SET 2
SLIDE SHOW
INT. R -STL ON
DELETE ALL
FORMAT
RETURN
[MENU] : END
7
MENU
INTERVAL
MEM STILL

To cancel interval photo recording

Perform either of the following:

– Set INT.R -STL to OFF in the menu settings.

– Set the POWER switch to a position other than MEMORY.

To perform normal photo recording during the interval time

You can perform normal photo recording only once during the interval time. Press PHOTO. The INTERVAL MEM STILL indicator flashes, and normal photo recording starts. To resume interval photo recording, press PHOTO again. The INTERVAL MEM STILL indicator lights up and interval photo recording restarts.

On interval time

The actual interval time may not be exactly the same as the selected time.

Recording edited pictures as a moving picture – Digital program editing (on a “Memory Stick”)

350 351

You can duplicate selected scenes (programs) for editing onto a “Memory Stick.”
The picture and sound are recorded up to the full capacity of a “Memory Stick” (MPEG MOVIE EX).

Before operation

- Insert a recorded tape into your camcorder.
- Insert a “Memory Stick” into your camcorder.

Making the program

(1) Set the POWER switch to VCR on your camcorder.

(2) Press MENU to display the menu settings.

(3) Turn the SEL/PUSH EXEC dial to select VIDEO EDIT in ETC, then press the dial.

(4) Turn the SEL/PUSH EXEC dial to select MEMORY, then press the dial.

(5) Turn the SEL/PUSH EXEC dial to select the desired image size in IMAGESIZE, then press the dial.

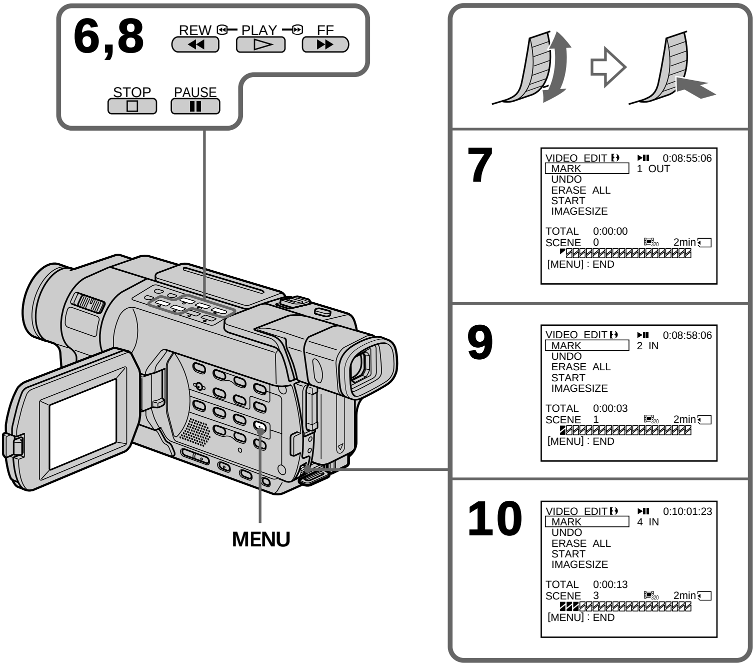
(6) Search for the beginning of the first scene you want to insert using the video control buttons, then pause playback.
You can fine-adjust one frame at a time with EDITSEARCH.

(7) Turn the SEL/PUSH EXEC dial to select MARK, then press the dial.
The IN point of the first program is set, and the upper part of the program mark changes to light blue.

(8) Search for the end of the first scene you want to insert using the video control buttons, then pause playback.

(9) Press the SEL/PUSH EXEC dial.
The OUT point of the first program is set, then the lower part of the program mark changes to light blue.

(10) Repeat steps **(6)** to **(9)** to set other programs.
When the program is set, the program mark changes to light blue.
You can set 20 programs in maximum.



7

```
VIDEO  EDIT         ▶II   0:08:55:06
 MARK               1  OUT
 UNDO
 ERASE  ALL
 START
 IMAGESIZE

TOTAL     0:00:00
SCENE     0                  2min
[MENU] : END
```

9

```
VIDEO  EDIT         ▶II   0:08:58:06
 MARK               2  IN
 UNDO
 ERASE  ALL
 START
 IMAGESIZE

TOTAL     0:00:03
SCENE     1                  2min
[MENU] : END
```

10

```
VIDEO  EDIT         ▶II   0:10:01:23
 MARK               4  IN
 UNDO
 ERASE  ALL
 START
 IMAGESIZE

TOTAL     0:00:13
SCENE     3                  2min
[MENU] : END
```

Erasing the program you have set

Erase OUT first and then IN of the last program.

(1) Turn the SEL/PUSH EXEC dial to select UNDO, then press the dial.
(2) Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial. The last set program mark flashes, then the setting is canceled.

To cancel erasing

Select RETURN in step **(2)**.

Erasing all programs

(1) Select VIDEO EDIT in the menu setting. Turn the SEL/PUSH EXEC dial to select MEMORY, then press the dial.

(2) Select ERASE ALL. Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.
All the program marks flash, then the settings are canceled.

To cancel erasing all programs

Select RETURN in step **(2)**.

To cancel a program you have set

Press MENU.
The program is stored in memory until the tape is ejected.

Notes

- Digital program editing does not work with tapes recorded in the Hi8 Hi8/standard 8 mm 8 system.
- You cannot dub the title or display indicators. However, you can dub the title which has already been recorded on a tape.
- You cannot operate recording during Digital program editing on a “Memory Stick.”
- The moving picture files recorded on your camcorder cannot be played back on other camcorders without the folder creation function.

You cannot set IN or OUT to the following portions of the tape:

– A portion recorded in Hi8 Hi8/standard 8 mm 8 system
– A blank portion of the tape

The total time may not be displayed correctly in the following cases:

– The tape is recorded in the Hi8 Hi8/standard 8 mm 8 system.
– There is a blank portion between IN and OUT on the tape.

While making a program

If you eject the cassette, NOT READY appears on the screen. The program will be erased.

Recording folder

You cannot change the recording folder.
The recording folder you selected when the POWER switch was set to MEMORY is used (p. 162).

Performing the program (Dubbing onto a "Memory Stick")

(1) Select VIDEO EDIT in the menu setting. Turn the SEL / PUSH EXEC dial to select MEMORY, then press the dial.

(2) Select START. Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
Your camcorder searches for the beginning of the first program, then starts dubbing.
The program mark flashes.
The SEARCH indicator appears during search, the EDITING indicator and the REC indicator appear during writing of data on your camcorder, and the REC indicator appears during dubbing on the "Memory Stick."
The program mark changes to light blue after dubbing is complete.
When the dubbing ends, your camcorder automatically stops.
Then the display returns to the VIDEO EDIT initial screen.

To stop dubbing during editing

Press ■ using the video control buttons.
The program you made is recorded on a "Memory Stick" up to the place where you press ■.

To end the Digital program editing

Press MENU.

Note

A blank portion may not be recorded on the "Memory Stick" correctly.

NOT READY appears on the screen when:

– The program to operate Digital program editing has not been made.
– The "Memory Stick" is not inserted.
– The write-protect tab on the "Memory Stick" is set to LOCK.

When the "Memory Stick" does not have enough space to record

The LOW MEMORY indicator appears on the screen. However, you can record pictures up to the time indicated.

When available recording time is not left on the "Memory Stick"

"MEMORY FULL" appears.

Setting up a folder

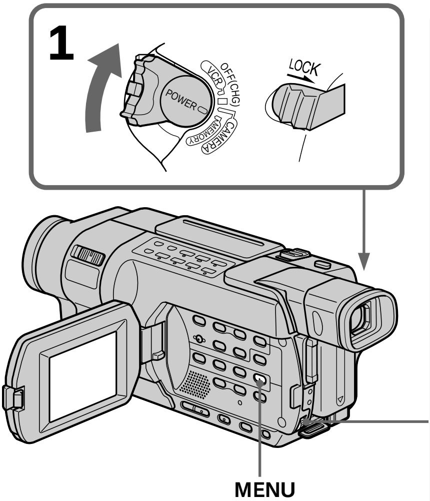
350 **351**

You can create folders in a “Memory stick” and group recorded images in them.
You can group images by selecting a folder for each recording, for convenient later reference.
Images are recorded in the 101MSDCF folder unless other folders have been created.
You can create folders up to 999MSDCF.

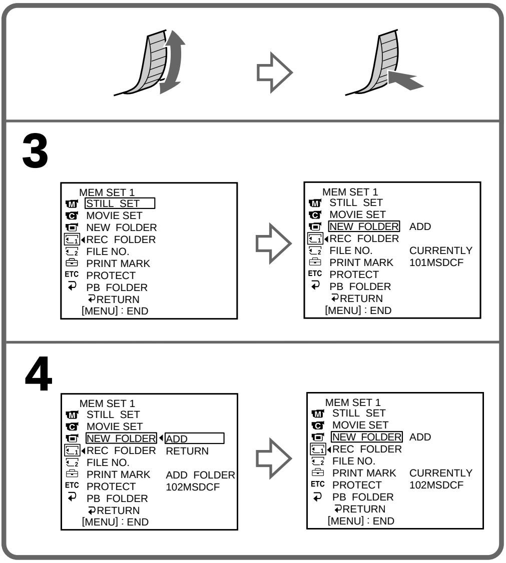
Before operation
Insert a “Memory stick” into your camcorder.

Creating a new folder

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu settings.
(3) Turn the SEL / PUSH EXEC dial to select NEW FOLDER in , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select ADD, then press the dial.
A new folder is created. The numeric part of the folder name is one larger than that of the last created folder. The image you record next time is stored in this newly created folder.



1
OFF(CHG)
VCR
POWER
CAMERA
MEMORY
LOCK
MENU



3
MEM SET 1
STILL SET
MOVIE SET
NEW FOLDER
REC FOLDER
FILE NO.
PRINT MARK
PROTECT
PB FOLDER
RETURN
[MENU] : END
ADD
CURRENTLY
101MSDCF
4
ADD
RETURN
ADD FOLDER
102MSDCF
CURRENTLY
102MSDCF

To cancel creating a new folder

Press ↩ RETURN in step **(4)**.

Notes

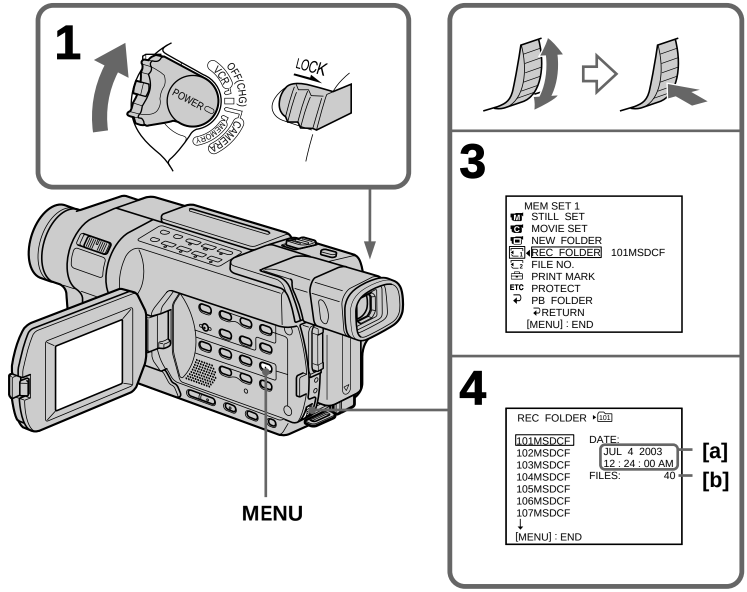
- You cannot create folders in the following cases:
  - No “Memory Stick” is inserted.
  - The write-protect tab on the “Memory Stick” is set to LOCK.
  - Folders have already been created in the “Memory Stick” up to the limit (up to folder 999MSDCF), or a folder named 999MSDCF already exists.
- If you try to record an image in a folder that already contains 9999 images, or the folder contains an image named Dsc09999.jpg or Mov09999.mpg, a new folder is created automatically and the image is recorded in there.
- Folders cannot be deleted with your camcorder.

The folder in which images are recorded

Images will be recorded in the same folder until you select another folder or create a new folder.

Selecting a recording folder

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu settings.
(3) Turn the SEL / PUSH EXEC dial to select REC FOLDER in , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select the desired folder, then press the dial. The image you record next time is recorded in this folder.


1
POWER
OFF(CHG)
VCR
CAMERA
MEMORY
LOCK
3
MEM SET 1
STILL SET
MOVIE SET
NEW FOLDER
REC FOLDER 101MSDCF
FILE NO.
PRINT MARK
PROTECT
PB FOLDER
RETURN
[MENU] : END
4
REC FOLDER 101
101MSDCF
102MSDCF
103MSDCF
104MSDCF
105MSDCF
106MSDCF
107MSDCF
DATE:
JUL 4 2003
12 : 24 : 00 AM
FILES: 40
[MENU] : END
[a]
[b]
MENU

[a]: The date when the folder is created
[b]: The number of the files stored in the folder

To cancel selecting a recording folder

Press ↩ RETURN in step **(3)**.

Note

You cannot select a recording folder in the following cases:
– No “Memory Stick” is inserted.
– The write-protect tab on the “Memory Stick” is set to LOCK.
– Folder 100 MSDCF (The folder is only for playback).

Viewing still images – Memory Photo playback

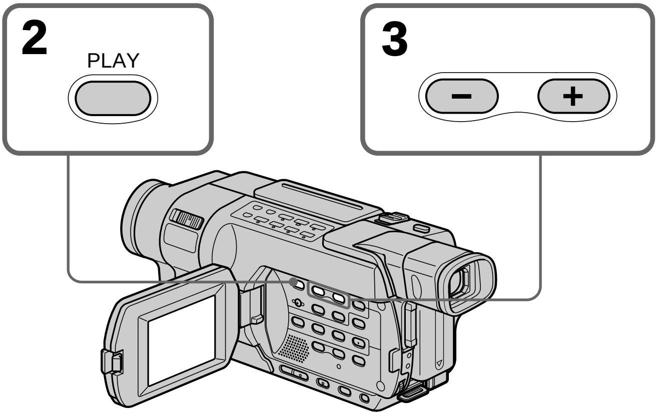
350 **351**

You can play back still images recorded on a "Memory Stick." By selecting the index screen, you can also play back six images including moving pictures at a time arranged in the same order they are in the "Memory Stick."

Before operation

Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MEMORY PLAY. The last recorded image is displayed.
(3) Press MEMORY +/– to select the desired still image.
–: To see the previous image
+: To see the next image



To stop memory photo playback

Press MEMORY PLAY.

Note

You may not be able to play back images with your camcorder:
– When playing back image data modified on your computer.
– When playing back image data shot with other equipment.

Notes on the file name

- The directory number may not be displayed and only the file name may be displayed if the structure of the directory does not conform to the DCF standard.
- The file name flashes on the screen if the file is corrupted or the file is unreadable.

To play back recorded images on a TV screen

- Before operation, connect your camcorder to the TV with the A/V connecting cable supplied with your camcorder (p. 51).
- When operating memory photo playback on a TV or the LCD screen, image quality may appear to have deteriorated. This is not a malfunction. The image data is as good as ever.
- Turn the audio volume of the TV down before operation, or noise (howling) may be output from the TV speakers.

When there is only one folder on the "Memory Stick" and no image is in it

"⊘ NO FILE" appears.

PB (playback) folder

You can select the PB folder only in MEMORY mode.

Screen indicators during still image playback

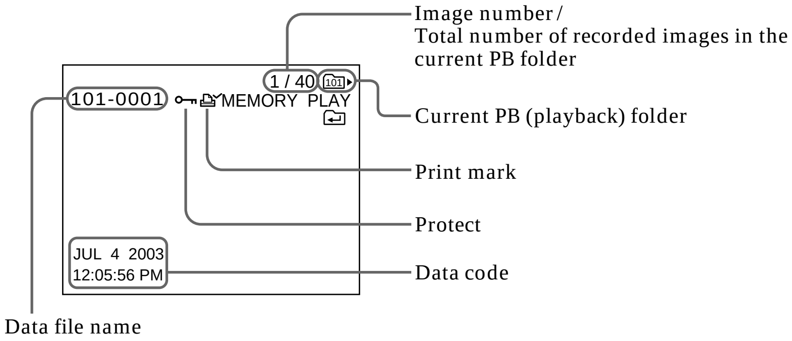


Image number/
Total number of recorded images in the current PB folder
1 / 40
101
101-0001
MEMORY PLAY
Current PB (playback) folder
Print mark
Protect
JUL 4 2003
12:05:56 PM
Data code
Data file name

When a "Memory Stick" contains multiple folders

The following marks appear on the first and last images in a folder.

↵: You can move to the previous folder.
↳: You can move to the next folder.
↵↳: You can move to both the previous and the next folder.

Data code

You can view data code (date/time or various settings when recorded) by pressing DATA CODE on the Remote Commander.

To make the indicators disappear

Press DISPLAY.

Playing back six recorded images at a time (index screen)

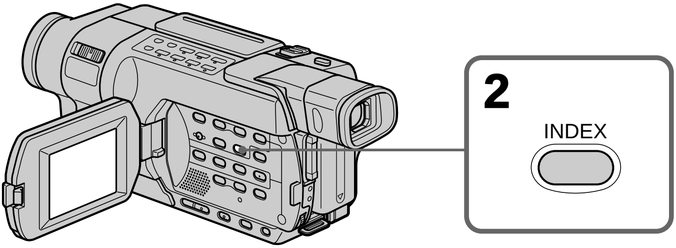
You can play back six recorded images at a time. This function is especially useful when searching for a particular image.

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.

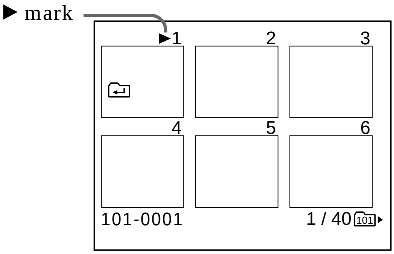
(2) Press MEMORY INDEX to display the index screen.



A red ▶ mark appears above the image that is displayed before changing to the index screen mode.

+ : To see the next images

– : To see the previous images



To return to the normal playback screen (single screen)

Press MEMORY +/– to move the ▶ mark to the image you want to display on full screen, then press MEMORY PLAY.

Note

When displaying the index screen, the number appears above each image. This indicates the order in which images are recorded on the “Memory Stick.” These numbers are different from the data file names (p. 126).

Image data modified on your computer or shot with other equipment

These files are sometimes not displayed on the index screen.

Viewing moving pictures – MPEG movie playback

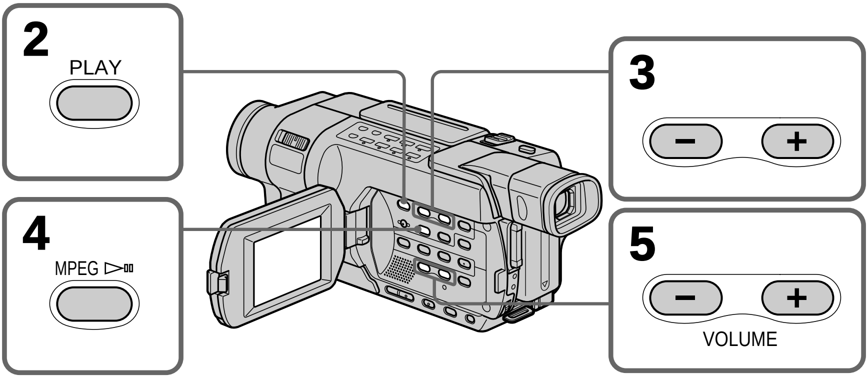
350 351

You can play back moving pictures recorded on a “Memory Stick.” By selecting the index screen, you can also play back six images including still images at a time arranged in the same order they are in the “Memory Stick.”

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MEMORY PLAY. The last recorded image is displayed.
(3) Press MEMORY +/– to select the desired moving pictures.
  – : To see the previous picture
  + : To see the next picture
(4) Press MPEG ►II or SEL/PUSH EXEC dial to start playback.
(5) To adjust the volume, press either of the two buttons on VOLUME.
  – : To turn the volume down
  + : To turn the volume up



To stop MPEG movie playback

Press MPEG ►II or SEL/PUSH EXEC dial.

Note

You may not be able to play back images with your camcorder:

– When playing back image data modified on your computer.

– When playing back image data shot with other equipment.

To play back recorded images on a TV screen

- Before operation, connect your camcorder to the TV with the A/V connecting cable supplied with your camcorder (p. 51).
- Turn the audio volume of the TV down before operation, or noise (howling) may be output from the TV speakers.

When there is only one folder on the “Memory Stick” and no image is in it

“⊘ NO FILE” appears.

PB (playback) folder

You can select the PB folder only in MEMORY mode.

Playing back a moving picture from the desired part

The moving picture recorded on a “Memory Stick” is divided into 60 parts.
You can select any point and play back the picture.

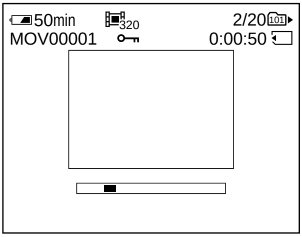
(1) Follow steps **(1)** to **(3)** on page 166.

(2) Turn the SEL/PUSH EXEC dial and select the point where you want to start playback, then press the dial.

↑ : To see the next part

↓ : To see the previous part

As you turn the dial to select the playback scene you want, the bar and counter change to indicate the playback point.



(3) Press MPEG ►II or SEL/PUSH EXEC dial to start playback.

(4) To adjust the volume, press either of the two buttons on VOLUME.

– : To turn the volume down

+ : To turn the volume up

To stop MPEG movie playback

Press MPEG ►II or SEL/PUSH EXEC dial.

When recording time is not long

The moving picture may not be divided into 60 parts.

Screen indicators during moving picture playback

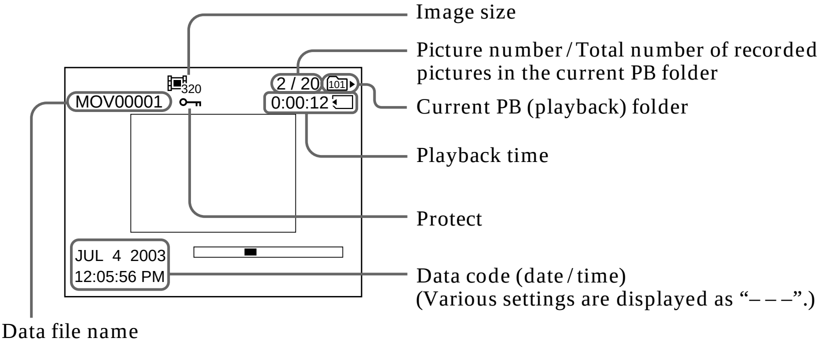


Image size
Picture number/Total number of recorded pictures in the current PB folder
Current PB (playback) folder
Playback time
Protect
Data code (date/time)
(Various settings are displayed as "– – –".)
Data file name
320
MOV00001
2 / 20
101
0:00:12
JUL 4 2003
12:05:56 PM

Data code (date/time)

You can view the data code (date/time) by pressing DATA CODE on the Remote Commander during playback.

To make the indicators disappear

Press DISPLAY.

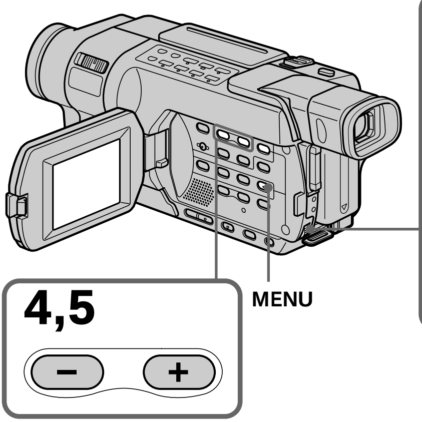
Selecting a folder to view

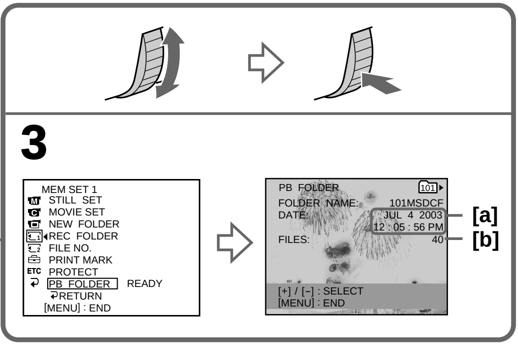
350 **351**

You can select a folder to view images in it.

Before operation
Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu settings.
(3) Turn the SEL/PUSH EXEC dial to select PB FOLDER in ⊡, then press the dial (p. 217).
(4) Press MEMORY +/– to select the desired folder.
–: To view the previous folder
+: To view the next folder
The first image in the current selected PB folder and the folder information are displayed.
(5) Press MENU when you find the folder that contains images you want to view. Press MEMORY +/– to select the desired image in the folder.





PB FOLDER 101
FOLDER NAME: 101MSDCF
DATE: JUL 4 2003 12 : 05 : 56 PM
FILES: 40
[+] / [–] : SELECT
[MENU] : END

[a]: The date when the folder is created
[b]: The number of the files stored in the folder

To cancel selecting the folder

Press ↩ RETURN in step **(3)**.

Note
Folders created, or renamed with your computer may not be recognized by your camcorder.

Current PB folder
The current PB folder is valid until the next recording is made. Once you record an image, the current recording folder becomes the current PB folder.

When no image is in the PB folder
“NO FILE AVAILABLE” appears.

Copying images recorded on a "Memory Stick" to a tape

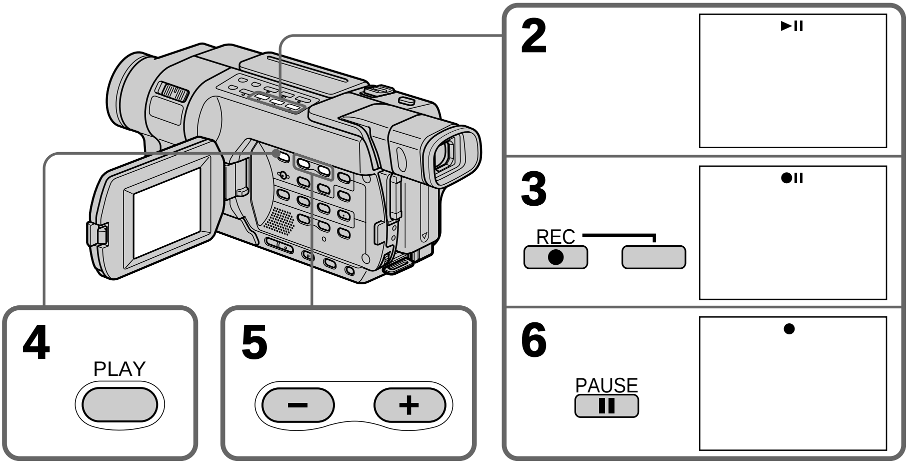
350 351

You can copy still images recorded on a "Memory Stick" to a tape.

Before operation

- Insert a tape for recording into your camcorder.
- Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to VCR.
(2) Using the video control buttons, search for a point where you want to record the desired still image. Set the tape to playback pause mode.
(3) Press ● REC and the button on its right simultaneously on your camcorder. The tape is set to the recording pause mode.
(4) Press MEMORY PLAY. The last recorded image is displayed.
(5) Press MEMORY+/– to select the desired image.
   –: To see the previous image
   +: To see the next image
(6) Press II to start recording and press II again to stop. The ● indicator appears on the screen during recording.
(7) If you have more to copy, repeat steps **(5)** to **(6)**.



To stop copying

Press ■.

During copying

You cannot operate the following buttons:
– MEMORY PLAY
– MEMORY INDEX
– MEMORY DELETE
– MEMORY MIX
– MEMORY +/–

Note on the index screen

You cannot record the index screen.

If you press EDITSEARCH during pause mode

Memory playback stops.

Image data modified on your computer or shot with other equipment

You may not be able to copy modified images with your camcorder.

When copying movies

After step **(6)**, press the MPEG ►II button or SEL/PUSH EXEC dial and play back the image.

Enlarging still images recorded on a "Memory Stick" – Memory PB ZOOM

350 351

You can enlarge still images recorded on a "Memory Stick." You can select and view a desired part from the enlarged still image. Also, you can copy the desired part of the enlarged still image to a tape.

Before operation

Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.

(2) Press PB ZOOM on your camcorder while you are playing back images recorded on the "Memory Stick." The center of the image is enlarged to about twice its size, and ⬆ ⬇ appear on the screen.

(3) Turn the SEL/PUSH EXEC dial to move the enlarged image, then press the dial.

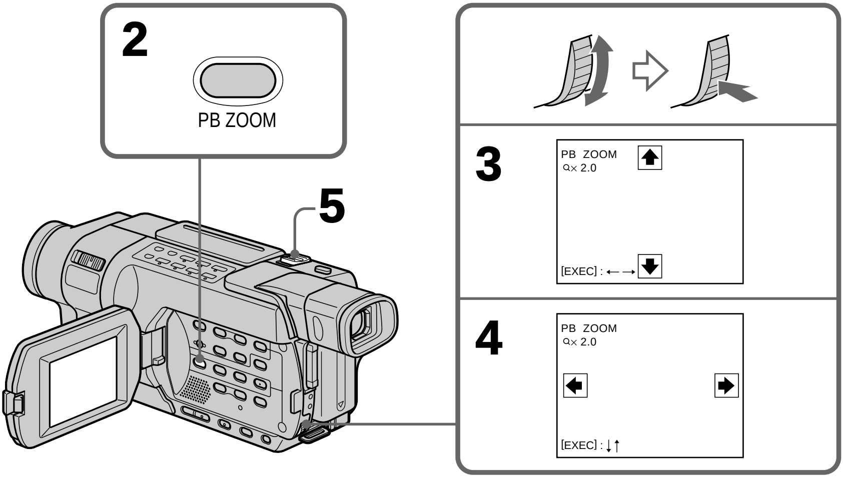
⬆ : To view the upper part of the image
⬇ : To view the lower part of the image

(4) Turn the SEL/PUSH EXEC dial to move the enlarged image, then press the dial.

⬅ : To view the left part of the image (Turn the dial downward.)
➡ : To view the right part of the image (Turn the dial upward.)

(5) Adjust the zoom ratio by the power zoom lever.
You can enlarge the image from 1.1 times up to five times its size.

W : To decrease the zoom ratio
T : To increase the zoom ratio



To cancel Memory PB ZOOM

Press PB ZOOM.

Memory PB ZOOM is canceled when the following buttons are pressed:

– MENU
– MEMORY PLAY
– MEMORY INDEX
– MEMORY +/–

Moving pictures recorded on a "Memory Stick"

Memory PB ZOOM does not work.

To copy the still image processed by Memory PB ZOOM to a tape

See page 170.

Playing back images continuously – SLIDE SHOW

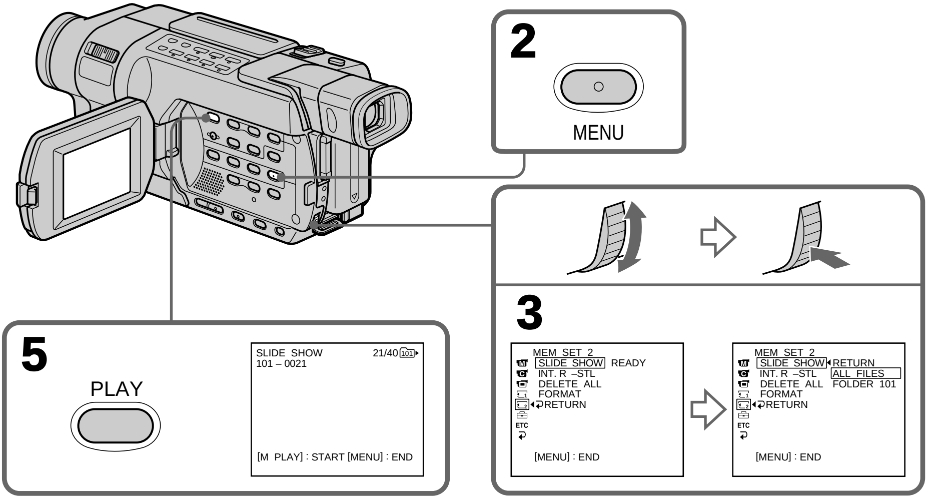
350 **351**

Your camcorder can play back images in sequence automatically. This function is useful especially when checking recorded images or during a presentation.

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu settings.
(3) Turn the SEL / PUSH EXEC dial to select SLIDE SHOW in ▭, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select the desired mode, then press the dial.
ALL FILES: All images in the “Memory Stick” are played back continuously.
FOLDER □□□*: All images in the current PB folder are played back continuously.
* □□□ stands for the folder number.
(5) Press MEMORY PLAY. Your camcorder plays back the images recorded on the “Memory Stick” in sequence.
The slide show ends after all images have been played back.


2
MENU
3
MEM SET 2
SLIDE SHOW READY
INT. R –STL
DELETE ALL
FORMAT
RETURN
ETC
[MENU] : END
MEM SET 2
SLIDE SHOW RETURN
INT. R –STL ALL FILES
DELETE ALL FOLDER 101
FORMAT
RETURN
[MENU] : END
5
PLAY
SLIDE SHOW 21/40 101
101 – 0021
[M PLAY] : START [MENU] : END

To cancel the slide show

Select RETURN in step **(4)**, then press the SEL / PUSH EXEC dial.

To pause during a slide show

Press MEMORY PLAY.

To start the slide show from a particular image

Select the desired image using MEMORY + / – buttons before step **(2)**.

To view recorded images on TV

Before operation, connect your camcorder to a TV with the A/V connecting cable supplied with your camcorder (p. 51).

If you change the “Memory Stick” during operation

The slide show does not operate. If you change the “Memory Stick,” be sure to follow the steps again from the beginning.

Preventing accidental erasure – Image protection

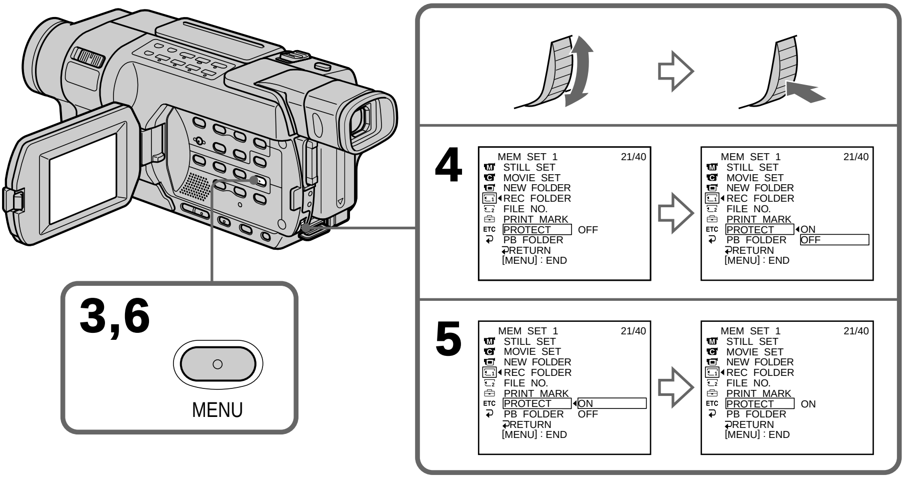
350 **351**

You can protect selected images to prevent accidental erasure.

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Play back the image you want to protect.
(3) Press MENU to display the menu settings.
(4) Turn the SEL / PUSH EXEC dial to select PROTECT in ⧉, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(6) Press MENU to make the menu settings disappear. The ⊶ mark is displayed beside the data file name of the protected image.


3,6
MENU
4
5
MEM SET 1 21/40
STILL SET
MOVIE SET
NEW FOLDER
REC FOLDER
FILE NO.
PRINT MARK
PROTECT OFF / ON
PB FOLDER OFF
RETURN
[MENU] : END

To cancel image protection

Select OFF in step **(5)**, then press the SEL / PUSH EXEC dial.
The ⊶ mark disappears from the image.

Note

Formatting erases all information on the “Memory Stick,” including the protected image data. Before formatting a “Memory Stick,” check its contents.

If the write-protect tab on the “Memory Stick” is set to LOCK

You cannot protect images.

Deleting images – DELETE

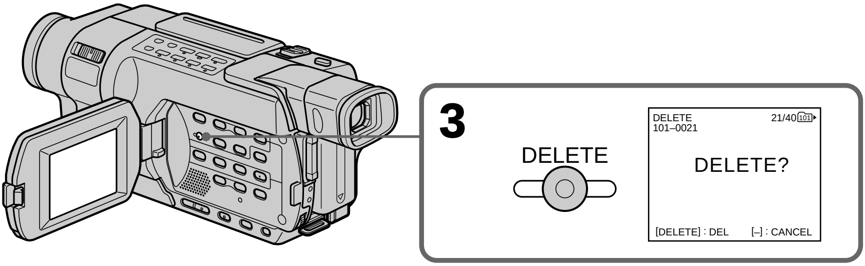
350 351

You can delete images stored in a “Memory Stick.” You can delete all images or only selected images.

Deleting selected images

Before operation
Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Play back the image you want to delete.
(3) Press MEMORY DELETE. The message DELETE? appears on the screen.
(4) Press MEMORY DELETE again. The selected image is deleted.



To cancel deleting an image
Press MEMORY – in step **(4)**.

To delete an image displayed on the index screen
Press MEMORY +/– to move the ▶ indicator to the image and follow steps **(3)** and **(4)**.

Notes
- You cannot delete a protected image. To delete a protected image, first cancel image protection.
- Once you delete an image, you cannot restore it. Before deleting an image, carefully check the image.
- Even if you delete the last image in the folder, the folder itself is not deleted.

If the write-protect tab on the “Memory Stick” is set to LOCK
You cannot delete images.

Deleting all images

You can delete all unprotected images in a “Memory Stick.”

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.

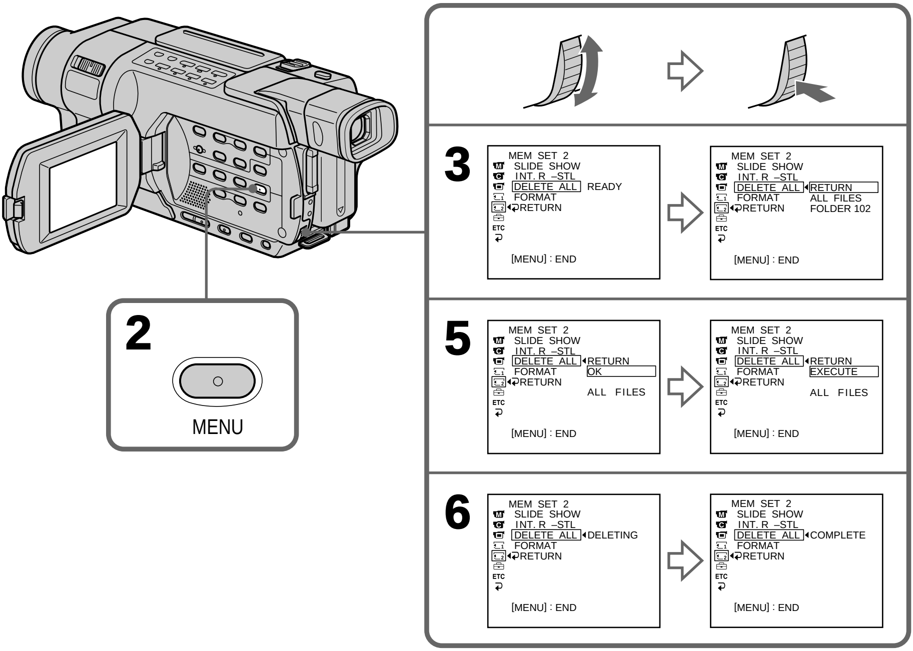
(2) Press MENU to display the menu settings.

(3) Turn the SEL/PUSH EXEC dial to select DELETE ALL in ▭2, then press the dial.

(4) Turn the SEL/PUSH EXEC dial to select the desired mode, then press the dial.
ALL FILES: All unprotected images in the “Memory Stick” are deleted.
FOLDER □□□*: All unprotected images in the current PB folder are deleted.
* □□□ stands for the folder number.

(5) Turn the SEL/PUSH EXEC dial to select OK, then press the dial. OK changes to EXECUTE.

(6) Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial. The DELETING indicator flashes on the screen. When all unprotected images are deleted, The COMPLETE indicator is displayed.


2
MENU
3
MEM SET 2
SLIDE SHOW
INT. R –STL
DELETE ALL
READY
FORMAT
RETURN
ETC
[MENU] : END
MEM SET 2
SLIDE SHOW
INT. R –STL
DELETE ALL
RETURN
FORMAT
ALL FILES
FOLDER 102
RETURN
[MENU] : END
5
MEM SET 2
SLIDE SHOW
INT. R –STL
DELETE ALL
RETURN
OK
FORMAT
RETURN
ALL FILES
[MENU] : END
MEM SET 2
SLIDE SHOW
INT. R –STL
DELETE ALL
RETURN
EXECUTE
FORMAT
RETURN
ALL FILES
[MENU] : END
6
MEM SET 2
SLIDE SHOW
INT. R –STL
DELETE ALL
DELETING
FORMAT
RETURN
[MENU] : END
MEM SET 2
SLIDE SHOW
INT. R –STL
DELETE ALL
COMPLETE
FORMAT
RETURN
[MENU] : END

To cancel deleting all the images

Select RETURN in step **(4)** or **(5)**, then press the SEL / PUSH EXEC dial.

Note

You cannot delete the folders with your camcorder.

While the DELETING indicator appears

Do not turn the POWER switch or press any buttons.

If the write-protect tab on the “Memory Stick” is set to LOCK

You cannot delete images.

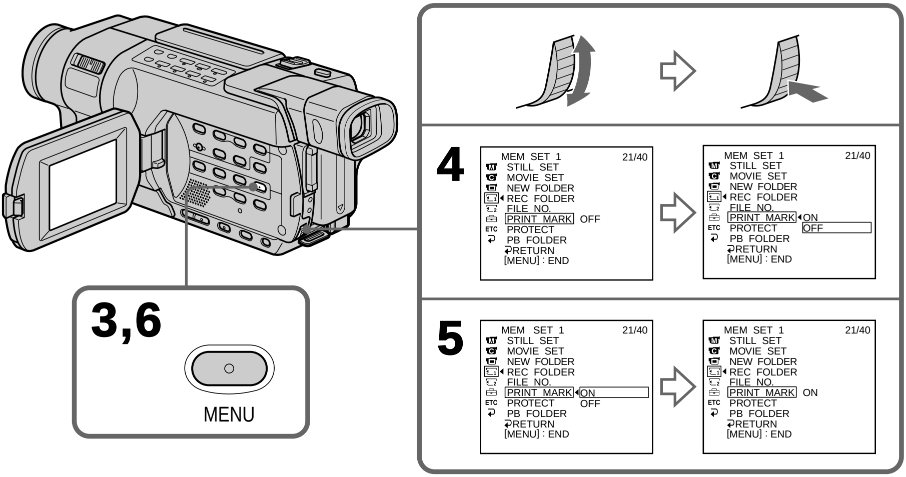
Writing a print mark – PRINT MARK

350 **351**

You can specify a recorded still image to print out by writing a print mark. This function is useful for printing out still images later.
Your camcorder conforms to the DPOF (Digital Print Order Format) standard for specifying still images to print out.

Before operation
Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Play back the still image you want to write a print mark on.
(3) Press MENU to display the menu settings.
(4) Turn the SEL/PUSH EXEC dial to select PRINT MARK in , then press the dial.
(5) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
(6) Press MENU to make the menu settings disappear. The mark is displayed beside the data file name of the image with a print mark.


3,6
MENU
4
MEM SET 1 21/40
STILL SET
MOVIE SET
NEW FOLDER
REC FOLDER
FILE NO.
PRINT MARK OFF
PROTECT
PB FOLDER
RETURN
[MENU] : END
MEM SET 1 21/40
PRINT MARK ON
OFF
5
MEM SET 1 21/40
PRINT MARK ON
OFF
MEM SET 1 21/40
PRINT MARK ON

To cancel writing of print marks

Select OFF in step **(5)**, then press the SEL/PUSH EXEC dial.
The mark disappears from the image.

If the write-protect tab on the "Memory Stick" is set to LOCK
You cannot write print marks on still images.

Moving pictures
You cannot write print marks on moving pictures.

While the file name is flashing
You cannot write the print mark on the still image.

Viewing images on your computer – Introduction

150 250 350 351

The following are ways of connecting the camcorder to a computer to view images saved on a “Memory Stick”* 350 351, recorded on tape or live from your camcorder on your computer.

* To view images on a computer which has a Memory Stick slot, first remove the “Memory Stick” from the camcorder and then insert it into the computer’s Memory Stick slot.

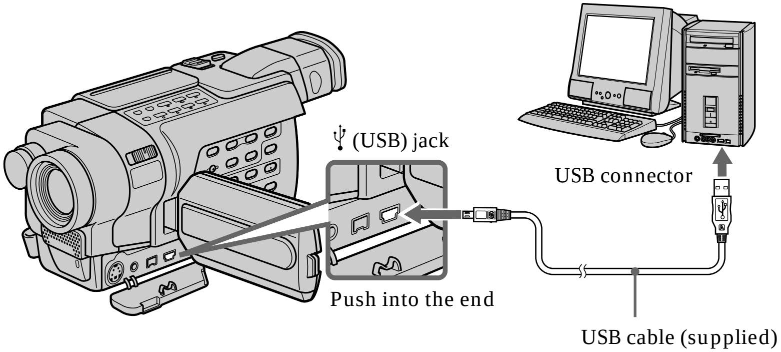
	Camcorder Connection jack	Connection cable	Computer environment requirements
Tape stills and movies / Picture live from your camcorder	ψ (USB) jack 250 350 351	ψ (USB) cable (supplied)	ψ (USB) connector, editing software
	DV jack	i.LINK cable (optional)	i.LINK connector, editing software
“Memory Stick” stills and movies 350 351	ψ (USB) jack	ψ (USB) cable (supplied)	ψ (USB) connector, editing software

When connecting to a computer via the USB jack, complete installation of the USB driver beforehand. If you connect the camcorder to the computer first, you will not be able to install the USB driver correctly.

For details about your computer’s jacks and editing software, contact the computer manufacturer.

Viewing pictures recorded on a tape or live from your camcorder – USB Streaming

When connecting to a computer using the USB cable Windows 250 350 351 (p. 187)



Follow the instructions in order described below

System requirements (p. 187)

↓

Installing the USB driver (p. 189)

↓

Installing ImageMixer (p. 191)

↓

Making the computer recognize the camcorder (p. 192)

↓

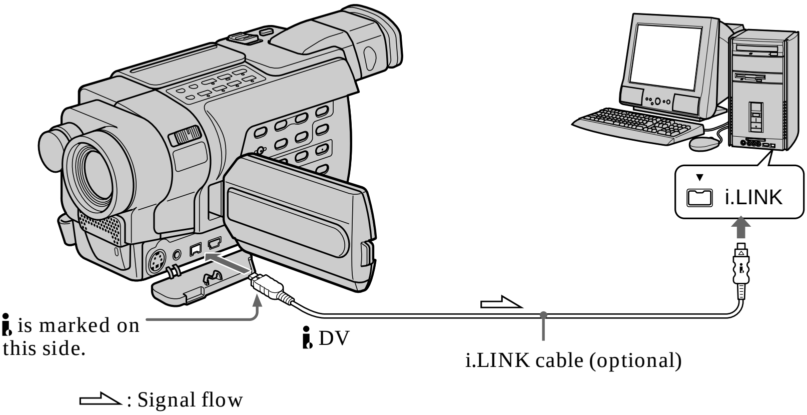
Capturing images with ImageMixer (p. 197)

– Viewing pictures recorded on a tape (p. 197)
– Viewing pictures live from your camcorder (p. 199)
– Capturing still images (p. 199)
– Capturing moving pictures (p. 200)

When connecting to a computer using the i.LINK cable

Your computer must have an i.LINK connector and editing software installed that can read video signals.

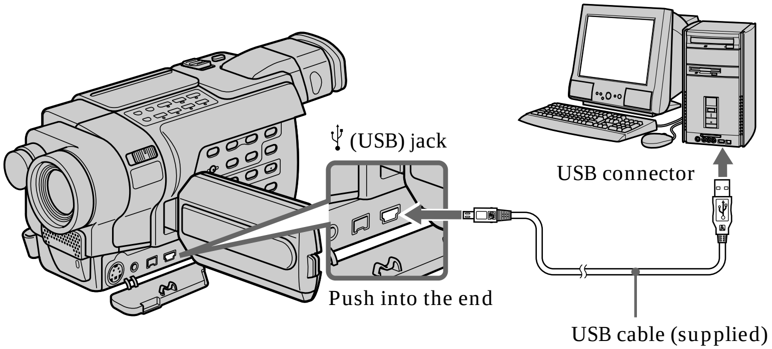
Refer to the operating instructions of the software for further information.


i.LINK
is marked on this side.
DV
i.LINK cable (optional)
: Signal flow

Viewing images on your computer – Introduction

Viewing images recorded on a "Memory Stick" 350 351

When connecting to a computer using the USB cable



You can also use a Memory Stick Reader / Writer (optional).

Follow the instructions in order described below

Windows

System requirements (p. 188)

↓

Installing the USB driver (p. 189)

↓

Installing Image Transfer (p. 190)

↓

Making the computer recognize the camcorder (p. 192)

↓

Viewing images with Image Transfer (p. 202)
Viewing images without Image Transfer (p. 203)

Macintosh

System requirements (p. 205)

↓

Installing the USB driver (p. 206)

↓

Viewing images (p. 207)

When connecting to a computer without a USB connector

Use an optional floppy disk adaptor for Memory Stick or a PC card adaptor for Memory Stick.

When purchasing an accessory, check its catalog beforehand for the recommended operating environment.

When connecting with USB port

You cannot operate your camcorder setting the POWER switch to MEMORY.

Notes on using your computer

"Memory Stick" 350 351

- "Memory Stick" operations on your camcorder cannot be assured if a "Memory Stick" formatted on your computer is used on your camcorder, or if the "Memory Stick" in your camcorder was formatted from your computer when the USB cable was connected.
- Do not compress the data on the "Memory Stick." Compressed files cannot be played back on your camcorder.

Software

- Depending on your application software, the file size may increase when you open a still image file.
- When you load an image modified using retouching software from your computer to your camcorder or when you directly modify the image on your camcorder, the image format will differ so a file error indicator may appear and you may be unable to open the file.

Communications with your computer

Communications between your camcorder and your computer may not recover after recovering from Suspend, Resume, or Sleep.

Connecting your camcorder to your computer using the USB cable Windows

250 350 351

Complete installation of the USB driver before connecting the camcorder to the computer. If you connect the camcorder to the computer first, you will not be able to install the USB driver correctly.

When connecting to a computer using the USB cable

You must **install a USB driver** onto your computer to connect the camcorder to the computer's USB connector. The USB driver can be found on the CD-ROM supplied, along with the application software required for viewing images.

System requirements

To view pictures recorded on a tape or live from your camcorder

OS:
Microsoft Windows 98SE, Windows Me, Windows 2000 Professional, Windows XP Home Edition or Windows XP Professional.
Standard installation is required.
However, operation is not assured if the above environment is an upgraded OS.
You cannot hear sound if your computer is running Windows 98, but you can read still images.
CPU:
Minimum 500 MHz Intel Pentium III or faster (800 MHz or faster recommended)
Application:
DirectX 8.0a or later
Sound system:
16 bit stereo sound card and stereo speakers
Memory:
64 MB or more
Hard disk:
Available memory required for installation:
at least 250 MB
Available hard disk memory recommended:
at least 1 GB (depending on the size of the image files edited)
Display:
4 MB VRAM video card, Minimum 800 × 600 dot high color (16 bit color, 65 000 colors), Direct Draw display driver capability. (At 800 × 600 dot or less, 256 colors and less, this product will not operate correctly)
Others:
The USB connector must be provided as standard.
This product is based on DirectX technology, so it is necessary to install DirectX.

You cannot use this function in the Macintosh environment.

System requirements

To view images recorded on a “Memory Stick” 350 351

OS:
Microsoft Windows 98, Windows 98SE, Windows Me, Windows 2000 Professional, Windows XP Home Edition or Windows XP Professional.
Standard installation is required.
However, operation is not assured if the above environment is an upgraded OS.
CPU:
MMX Pentium 200 MHz or faster
Display:
Minimum 800 × 600 dot high color (16 bit color, 65 000 colors). (At 800 × 600 dot or less, 256 colors and less, the screen for installing USB driver is not displayed.)
Others:
The USB connector must be provided as standard.
Windows Media Player must be installed (to play back moving pictures).

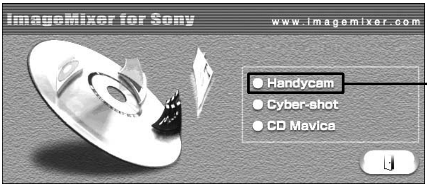
Notes
- Operations are not guaranteed for the Windows environment if you connect two or more USB equipment to a single computer at the same time, or when using a hub.
- Some equipment may not operate depending on the type of USB equipment that is used simultaneously.
- Operations are not guaranteed for all system requirements mentioned above.

Installing the USB driver

Start the following operation without connecting the USB cable to your computer.
Connect the USB cable according to “Making the computer recognize the camcorder.”

If you are using Windows 2000, log in with permission of administrators.
If you are using Windows XP, log in with permission of computer administrators.

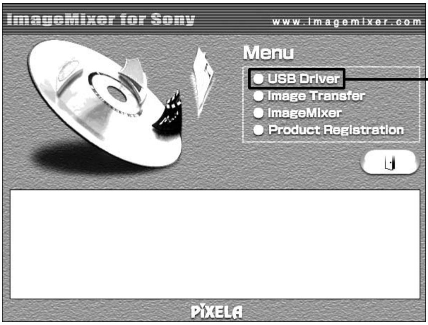
(1) Turn on your computer and allow Windows to load.
(2) Insert the supplied CD-ROM in the CD-ROM drive of your computer. The application software starts up. If the screen does not appear, double-click “My Computer” and then “ImageMixer” (CD-ROM Drive).
(3) Select “Handycam” on the screen.


ImageMixer for Sony
www.imagemixer.com
Handycam
Cyber-shot
CD Mavica

Click

The title screen appears.

(4) Move the cursor to “USB Driver” and click. This starts USB driver installation.


ImageMixer for Sony
www.imagemixer.com
Menu
USB Driver
Image Transfer
ImageMixer
Product Registration
PIXELA

Click

(5) Follow the on-screen messages to install the USB driver.
(6) Remove the CD-ROM and then restart the computer, following the instructions on the screen.

Note

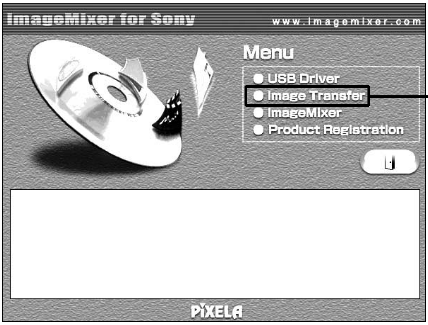
If you connect the USB cable before USB driver installation is complete, the USB driver will not be properly registered. Carry out installation again following the steps on page 194.

Installing Image Transfer 350 351

Image Transfer enables image data recorded on a “Memory Stick” to be automatically transferred (copied) to your computer.

If you are using Windows 2000, log in with permission of administrators.
If you are using Windows XP, log in with permission of computer administrators.

(1) Turn on your computer and allow Windows to load.
(2) Insert the supplied CD-ROM in the CD-ROM drive of your computer. The application software starts up.
(3) Select “Handycam” on the screen.
The title screen appears.
(4) Move the cursor to “Image Transfer” and click.


ImageMixer for Sony
www.imagemixer.com
Menu
USB Driver
Image Transfer
ImageMixer
Product Registration
PIXELA

Click

The Install Wizard program starts up and the “Choose Setup Language” screen appears.
(5) Select the language for installation.
(6) Follow the on-screen messages.
The installation screen disappears when installation is complete.

Connecting your camcorder to your computer using the USB cable

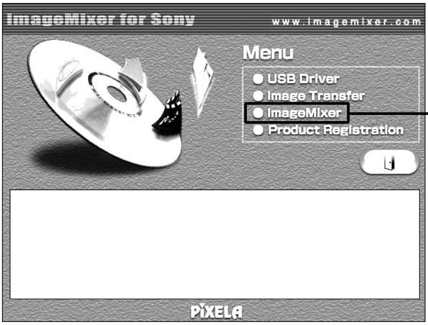
Windows

Installing ImageMixer

“ImageMixer Ver.1.5 for Sony” is an application that can capture or edit images, or create video CDs.

If you are using Windows 2000, log in with permission of administrators.
If you are using Windows XP, log in with permission of computer administrators.

(1) Turn on your computer and allow Windows to load.
(2) Insert the supplied CD-ROM into the CD-ROM drive of your computer.
The application software starts up.
(3) Select “Handycam” on the screen.
The title screen appears.
(4) Move the cursor to “ImageMixer” and click.



The Install Wizard program starts up and the “Choose Setup Language” screen appears.
(5) Select the language for installation.
(6) Follow the on-screen messages.
The installation screen disappears when installation is complete.
(7) If DirectX 8.0a or later version is not installed on your computer, continue installation after installing ImageMixer.
Follow the on-screen messages to install DirectX. After installation is complete, restart your computer.

Note

The title screen is not displayed if the screen size of your computer is set to less than 800 × 600 dots and 256 colors or less. See page 187 about the System requirements.

Memory Mix Album **350** **351**

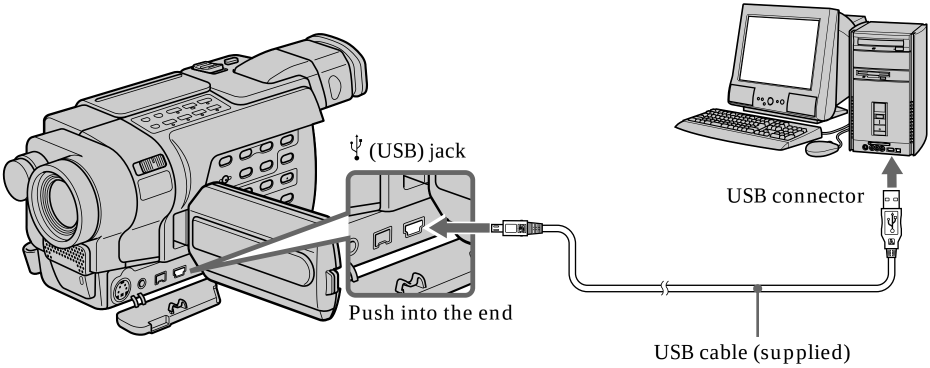
Once “ImageMixer” is installed, the Memory Mix album is created in “Album” of “ImageMixer” and sample images are stored in there.
Those sample images can be transferred from the Memory Mix album to a “Memory Stick” so that they can be used in MEMORY MIX (p. 140).

For details on the operation procedure, refer to the on-line help.

Making the computer recognize the camcorder

Viewing pictures recorded on a tape or live from your camcorder

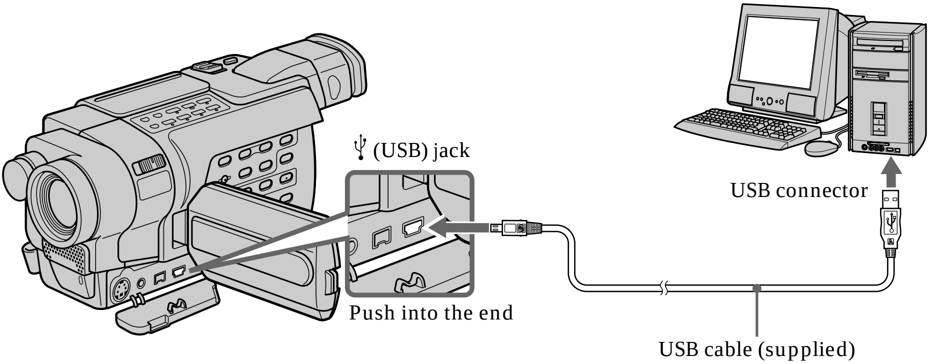
(1) Connect the AC Adaptor to your camcorder. Set the POWER switch to VCR.
(2) Select USB STREAM in ▤ to ON in the menu settings (p. 221).
(3) Connect the ψ (USB) jack on your camcorder to the USB connector on your computer using the supplied USB cable.
Your computer recognizes your camcorder, and the Windows Add Hardware Wizard starts.
(4) Follow the on-screen messages so that the Add Hardware Wizard recognizes that the USB drivers have been installed. The Add Hardware Wizard starts three times because three different USB drivers are installed. Be sure to allow the installation to complete without interrupting it.



Making the computer recognize the camcorder

Viewing images recorded on a "Memory Stick" 350 351

(1) Insert a "Memory Stick" into your camcorder.
(2) Connect the AC Adaptor and set the POWER switch to MEMORY.
(3) Connect the ψ (USB) jack on your camcorder to the USB connector on your computer using the supplied USB cable.
"USB MODE" appears on the screen of your camcorder. Your computer recognizes the camcorder, and the Add Hardware Wizard starts.



(4) Follow the on-screen messages so that the Add Hardware Wizard recognizes that the USB drivers have been installed. The Add Hardware Wizard starts two times because two different USB drivers are installed. Be sure to allow each installation to complete without interrupting them.

You cannot install the USB driver if a "Memory Stick" is not in your camcorder.
Be sure to insert a "Memory Stick" into your camcorder before installing the USB driver.

If you cannot install the USB driver

The USB driver has been registered incorrectly as your computer was connected to your camcorder before installation of the USB driver was completed. Perform the following procedure to correctly install the USB driver.

Viewing images recorded on a tape or live from your camcorder

Step 1: Uninstall the incorrect USB driver

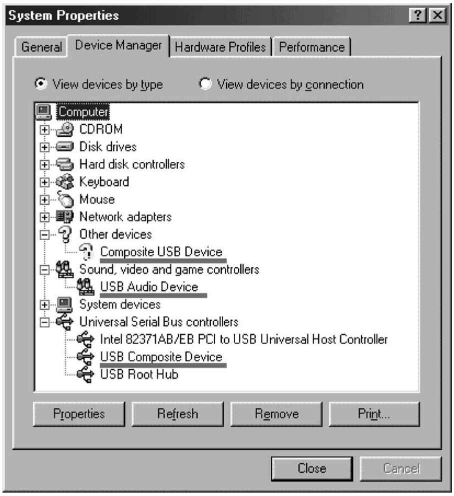
① Turn on your computer and allow Windows to load.
② Connect the AC Adaptor, and set the POWER switch to VCR.
③ Connect the ψ (USB) jack on your camcorder to the USB connector on your computer using the supplied USB cable.
④ Open your computer's "Device Manager."

Windows XP:
Select "Start" → "Control Panel" → "System" → "Hardware" tab and click the "Device Manager" button.
If there is no "System" inside "Pick a category" after clicking "Control Panel," click "Switch to classic view" instead.

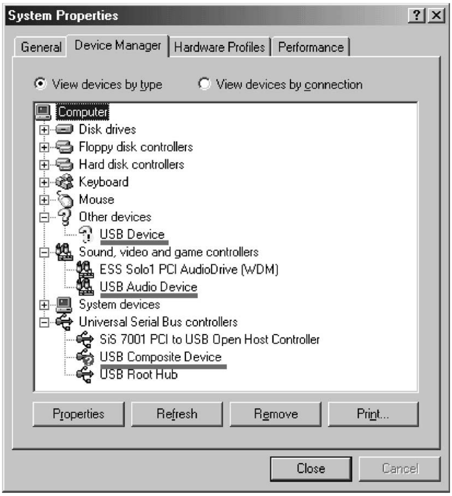
Windows 2000:
Select "My Computer" → "Control Panel" → "System" → "Hardware" tab and click the "Device Manager" button.

Windows 98SE/Windows Me:
Select "My Computer" → "Control Panel" → "System," and click "Device Manager."

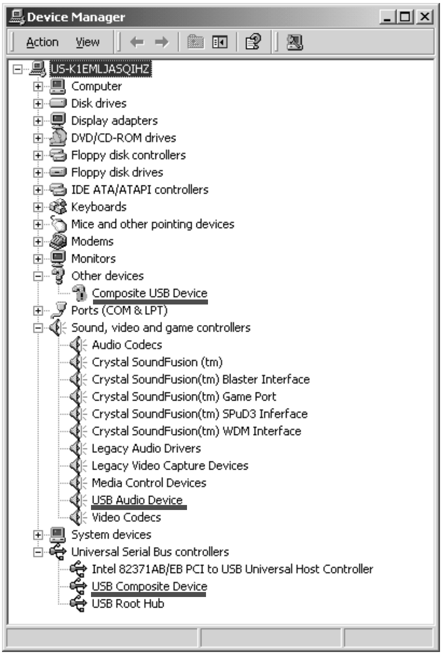
⑤ Select and delete the underlined devices.


System Properties
General
Device Manager
Hardware Profiles
Performance
● View devices by type
○ View devices by connection
Computer
CDROM
Disk drives
Hard disk controllers
Keyboard
Mouse
Network adapters
Other devices
Composite USB Device
Sound, video and game controllers
USB Audio Device
System devices
Universal Serial Bus controllers
Intel 82371AB/EB PCI to USB Universal Host Controller
USB Composite Device
USB Root Hub
Properties
Refresh
Remove
Print...
Close
Cancel

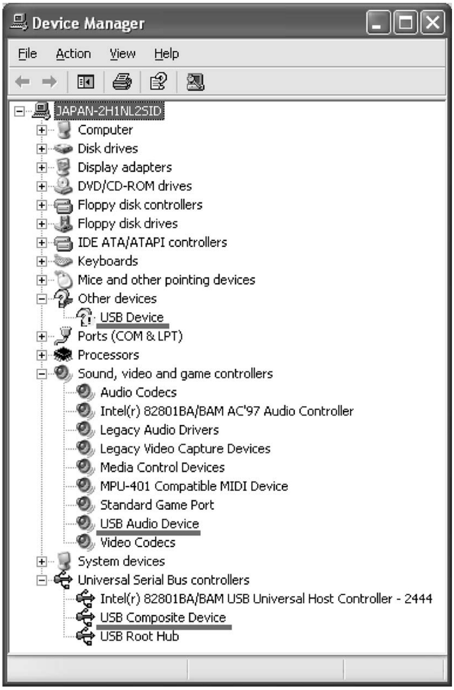
Windows 98SE


System Properties
General
Device Manager
Hardware Profiles
Performance
● View devices by type
○ View devices by connection
Computer
Disk drives
Floppy disk controllers
Hard disk controllers
Keyboard
Mouse
Other devices
USB Device
Sound, video and game controllers
ESS Solo1 PCI AudioDrive (WDM)
USB Audio Device
System devices
Universal Serial Bus controllers
SiS 7001 PCI to USB Open Host Controller
USB Composite Device
USB Root Hub
Properties
Refresh
Remove
Print...
Close
Cancel

Windows Me


Device Manager
Action
View
US-K1EMLJASQIHZ
Computer
Disk drives
Display adapters
DVD/CD-ROM drives
Floppy disk controllers
Floppy disk drives
IDE ATA/ATAPI controllers
Keyboards
Mice and other pointing devices
Modems
Monitors
Other devices
Composite USB Device
Ports (COM & LPT)
Sound, video and game controllers
Audio Codecs
Crystal SoundFusion (tm)
Crystal SoundFusion(tm) Blaster Interface
Crystal SoundFusion(tm) Game Port
Crystal SoundFusion(tm) SPuD3 Inferface
Crystal SoundFusion(tm) WDM Interface
Legacy Audio Drivers
Legacy Video Capture Devices
Media Control Devices
USB Audio Device
Video Codecs
System devices
Universal Serial Bus controllers
Intel 82371AB/EB PCI to USB Universal Host Controller
USB Composite Device
USB Root Hub

Windows 2000


Device Manager
File
Action
View
Help
JAPAN-2H1NL2SID
Computer
Disk drives
Display adapters
DVD/CD-ROM drives
Floppy disk controllers
Floppy disk drives
IDE ATA/ATAPI controllers
Keyboards
Mice and other pointing devices
Other devices
USB Device
Ports (COM & LPT)
Processors
Sound, video and game controllers
Audio Codecs
Intel(r) 82801BA/BAM AC'97 Audio Controller
Legacy Audio Drivers
Legacy Video Capture Devices
Media Control Devices
MPU-401 Compatible MIDI Device
Standard Game Port
USB Audio Device
Video Codecs
System devices
Universal Serial Bus controllers
Intel(r) 82801BA/BAM USB Universal Host Controller - 2444
USB Composite Device
USB Root Hub

Windows XP

⑥ Turn the POWER switch to OFF (CHG) on your camcorder, and then disconnect the USB cable.
⑦ Restart your computer.

Step 2: Install the USB driver on the supplied CD-ROM
Perform the entire procedure described in “Installing the USB driver” on page 189.

Viewing images recorded on a “Memory Stick” 350 351

Step 1: Uninstall the incorrect USB driver
① Turn on your computer and allow Windows to load.
② Insert a “Memory Stick” into your camcorder.
③ Connect the AC Adaptor, and set the POWER switch to MEMORY.
④ Connect the ψ (USB) jack on your camcorder to the USB connector on your computer using the supplied USB cable.
⑤ Open your computer’s “Device Manager.”
Windows XP:
Select “Start” → “Control Panel” → “System” → “Hardware” tab and click the “Device Manager” button.
If there is no “System” inside “Pick a category” after clicking “Control Panel,” click “Switch to classic view” instead.
Windows 2000:
Select “My Computer” → “Control Panel” → “System” → “Hardware” tab, and click the “Device Manager” button.
Other OS:
Select “My Computer” → “Control Panel” → “System,” and click “Device Manager.”
⑥ Select “Other devices.”
Select the device prefixed with the “?” mark and delete.
Ex: (?)Sony Handycam
⑦ Turn the POWER switch to OFF (CHG) on your camcorder, and then disconnect the USB cable.
⑧ Restart your computer.

Step 2: Install the USB driver on the supplied CD-ROM
Perform the entire procedure described in “Installing the USB driver” on page 189.

Viewing pictures recorded on a tape or live from your camcorder on your computer – USB Streaming Windows

250 350 351

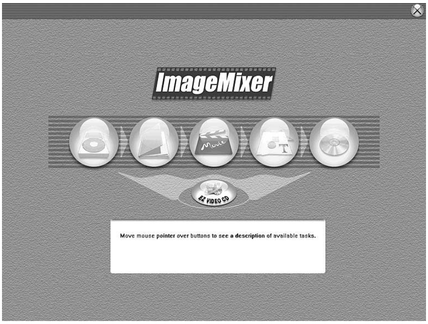
Capturing images with ImageMixer

You need to install the USB driver and ImageMixer to view images recorded on a tape with your computer (p. 189, 191).

Viewing pictures recorded on a tape

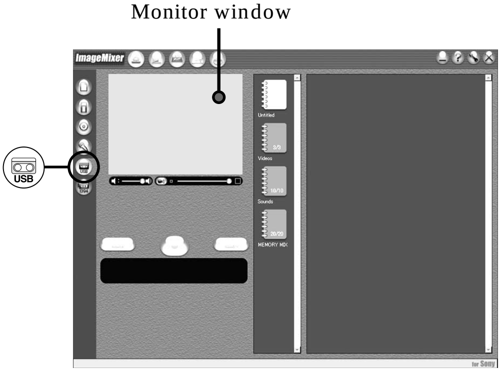
(1) Turn on your computer and allow Windows to load.
(2) Connect the AC Adaptor, and insert a tape into your camcorder.
(3) Set the POWER switch to VCR.
Select USB STREAM in to ON in the menu settings (p. 221).
(4) Select “Start” → “Program” → “PIXELA” → “ImageMixer” → “ImageMixer Ver.1.5 for Sony.”
The “ImageMixer Ver.1.5 for Sony” startup screen appears on your computer. The title screen is displayed.

(5) Click on the screen.

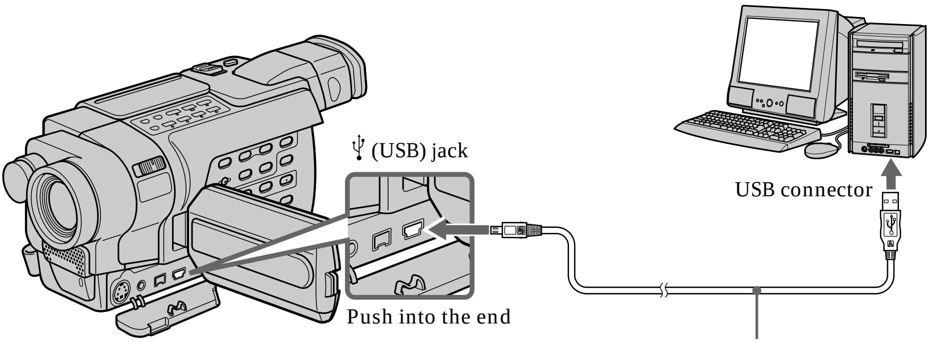


Move mouse pointer over buttons to see a description of available tasks.

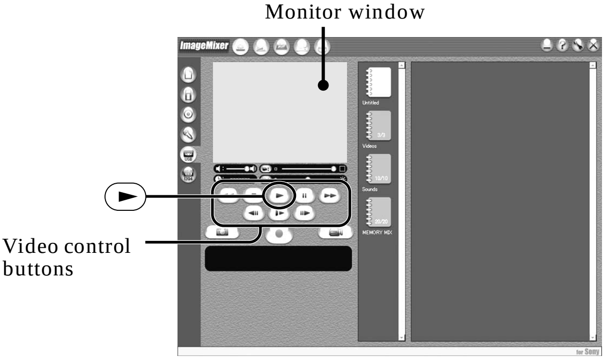
(6) Select USB.


Monitor window
USB
ImageMixer
Untitled
3/3
Videos
10/10
Sounds
20/20
MEMORY MIX
for Sony

(7) Connect the USB connector on your computer to the ψ (USB) jack on your camcorder using the supplied USB cable.


ψ (USB) jack
Push into the end
USB connector
USB cable (supplied)

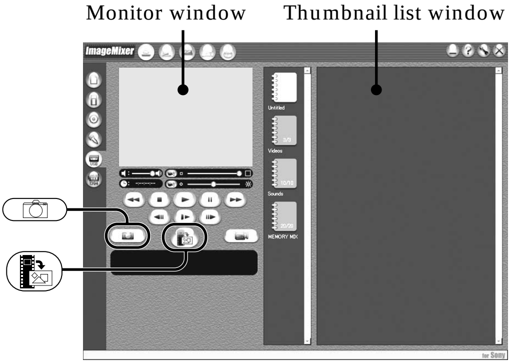
(8) Press ▶ to start playback.
You can control video operations with the buttons on the screen.
The picture appears in the monitor windows on your computer.


Monitor window
ImageMixer
Untitled
Videos
3/3
Sounds
10/10
MEMORY MIX
20/20
USB
1394
Video control buttons
for Sony

Viewing pictures live from your camcorder

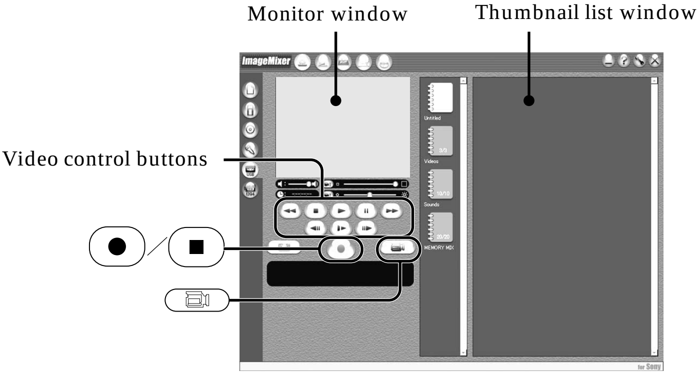
(1) Follow the steps **(1)**, **(2)** on page 197.
(2) Set the POWER switch to CAMERA.
Select USB STREAM in ▤ to ON in the menu settings (p. 221).
(3) Follow the steps **(4)** to **(7)** on pages 197 and 198.
The picture from your camcorder appears in the monitor window on your computer.

Capturing still images


Monitor window
Thumbnail list window
ImageMixer
Untitled
Videos
3/3
Sounds
10/10
MEMORY MIX
20/20
USB
1394
for Sony

(1) Select 📷 .
(2) Looking at the monitor window, move the cursor to 🎞 and click it at the point you want to capture.
The still image on the screen is captured.
Captured images are displayed in the thumbnail list window.

Capturing moving pictures



(1) Select (📹) .

(2) Look at the monitor window and click on (●) at the first scene of the movie you want to capture. (●) changes to (■) .

(3) Look at the monitor window and click on (■) at the last scene you want to capture. The captured images appear in the thumbnail list window.

To close “ImageMixer”

Click ⊗ in the upper right corner of the screen.

Notes

- When you view images on your computer with the USB connection, the following may occur. This is not a malfunction:
  - The image shakes up and down.
  - Some images are not displayed correctly due to noise, etc.
  - Some images are displayed with the cracking noise.
  - Images of different color systems to that of your camcorder are not displayed correctly.
- When your camcorder is in the standby mode with a cassette inserted, it turns off automatically after three minutes.
- We recommend setting DEMO MODE to OFF in the menu settings when your camcorder is in the standby mode, and no cassette is inserted.
- Indicators on the screen do not appear on images that are captured into your computer.
- You cannot carry out any “Memory Stick” operations during the USB Streaming.

If image data cannot be transferred by the USB connection

The USB driver has been registered incorrectly as your computer was connected to your camcorder before installation of the USB driver was completed. Reinstall the USB driver following the procedure on page 194.

If any trouble occurs

Close all running applications, then restart your computer.

Carry out the following operations after quitting the application:

– Disconnect the USB cable.
– Set the POWER switch to another position or OFF (CHG) on your camcorder.

Seeing the on-line help (operating instructions) of ImageMixer

A “ImageMixer Ver.1.5 for Sony” on-line help site is available where you can find detailed operating information.

(1) Click the ? button located in the upper-right corner of the screen.
The ImageMixer’s Manual screen appears.
(2) You can find the information you need from the list of contents.

To exit on-line help

Click the ☒ button in the top right corner of the screen.

If you have any questions about ImageMixer

“ImageMixer Ver.1.5 for Sony” is the product of PIXELA corporation. For more information, refer to the instruction manual of the CD-ROM supplied with your camcorder.

Viewing images recorded on a “Memory Stick” on your computer Windows

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Viewing images with Image Transfer

The image data recorded on a “Memory Stick” is automatically transferred (copied) to your computer with Image Transfer. You can also view images with ImageMixer.

(1) Turn on your computer and allow Windows to load.
(2) Insert a “Memory Stick” into your camcorder, and connect the AC Adaptor to your camcorder.
(3) Set the POWER switch to MEMORY.
(4) Connect the ψ (USB) jack on your camcorder to the USB connector on your computer using the supplied USB cable.
(5) Image Transfer automatically starts up and the transfer of image data begins.

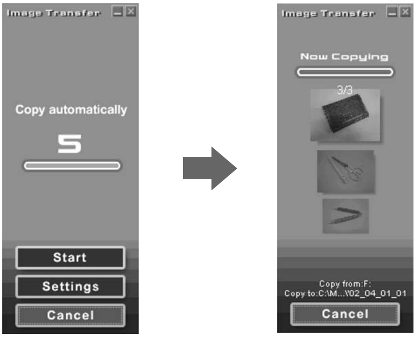
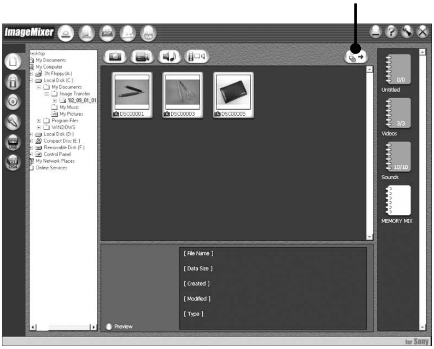


Image Transfer
Copy automatically
5
Start
Settings
Cancel
Image Transfer
Now Copying
3/3
Cancel

Copy from:F:
Copy to:C:\M...\02_04_01_01

(6) ImageMixer automatically starts up, enabling you to view the copied image.

Import button


ImageMixer
DSC00001
DSC00003
DSC00005
0/0
Untitled
3/3
Videos
10/10
Sounds
MEMORY MIX
[File Name]
[Data Size]
[Created]
[Modified]
[Type]
Preview
for Sony

(7) Select an album and the image, then press the import button.
The image is added in your album, and you can edit the image.

Viewing images recorded on a “Memory Stick” on your computer

Windows

Viewing images without Image Transfer

Before operation

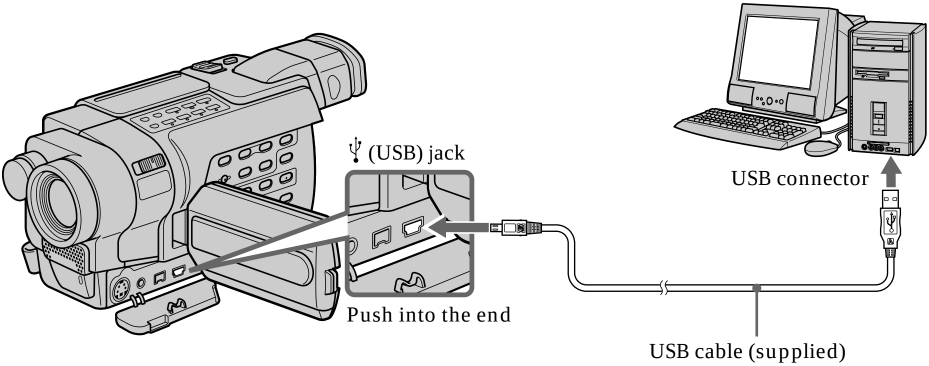
An application such as Windows Media Player must be installed to play back moving pictures in Windows environment.

(1) Turn on your computer and allow Windows to load.

(2) Insert a “Memory Stick” into your camcorder, and connect the AC Adaptor to your camcorder.

(3) Set the POWER switch to MEMORY.

(4) Connect the Ψ (USB) jack on your camcorder to the USB connector on your computer using the supplied USB cable.
“USB MODE” appears on the LCD screen of your camcorder.



(5) Open “My Computer” on Windows and double-click the newly recognized drive (e.g. “Removable Disk (F:)”).
The folders inside the “Memory Stick” are displayed.

(6) Double-click the desired image file from the folder in this order.
“Dcim” folder → “□□□msdcf” folder *[1)] → Image file *[2)]
For the detailed folder and file name, see “Image file storage destinations and image files” (p. 204).

---

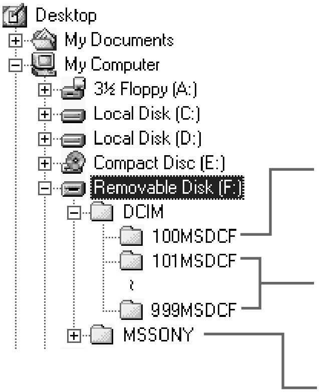
*1) □□□ stands for any number (within the range) from 101 to 999.

*2) Copying a moving picture file to the hard disk of your computer before viewing it is recommended. If you play back the file directly from the “Memory Stick,” the image and sound may break off.

Image file storage destinations and image files

Image files recorded with your camcorder are grouped in folders described below. The meanings of the file names are as follows. □□□□ stands for any number within the range from 0001 to 9999.

Example: For Windows Me users
(The drive recognizing your camcorder is [F:].)


Desktop
My Documents
My Computer
3½ Floppy (A:)
Local Disk (C:)
Local Disk (D:)
Compact Disc (E:)
Removable Disk (F:)
DCIM
100MSDCF
101MSDCF
999MSDCF
MSSONY

Folder containing image files recorded using other camcorders without the folder creation function (for playback only)

Folder containing image files recorded with your camcorder
When no new folders have been created, this is only “101MSDCF”

Folder containing moving picture data recorded using other camcorders without the folder creation function (for playback only)

Folder	File	Meaning
101MSDCF (up to 999MSDCF)	DSC0□□□□.JPG	Still image file
	MOV0□□□□.MPG	Moving picture file

Disconnect the USB cable and remove the “Memory Stick” or set the POWER switch to OFF (CHG)

For Windows 2000, Windows Me, Windows XP users

(1) Move the cursor to the “Unplug or Eject Hardware” on the Task Tray and click to cancel the applicable drive.

(2) After the “Safe to remove” message appears, disconnect the USB cable and eject the “Memory Stick” or set the POWER switch to OFF (CHG).

Connecting your camcorder to your computer using the USB cable (Macintosh)

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When connecting to a computer using the USB cable

You must **install a USB driver** onto your computer in order to connect the camcorder to the computer's USB connector. The USB driver can be found on the CD-ROM supplied, along with the application software required for viewing images.

System requirements

OS:
Mac OS 8.5.1 / 8.6 / 9.0 / 9.1 / 9.2 or Mac OS X (v10.0 / v10.1)
Standard installation is required.
However, note that upgrade to Mac OS 9.0 / 9.1 should be used for the following models:
– iMac with the Mac OS 8.6 standard installation and a slot loading type CD-ROM drive
– iBook or Power Mac G4 with the Mac OS 8.6 standard installation

Others:
The USB connector must be provided as standard.
QuickTime 3.0 or later must be installed to play back moving pictures.

Notes

- Operations are not guaranteed for the Macintosh environment if you connect two or more USB equipment to a single computer at the same time, or when using a hub.
- Some equipment may not operate depending on the type of USB equipment that is used simultaneously.
- Operations are not guaranteed for all the recommended computer environments mentioned above.

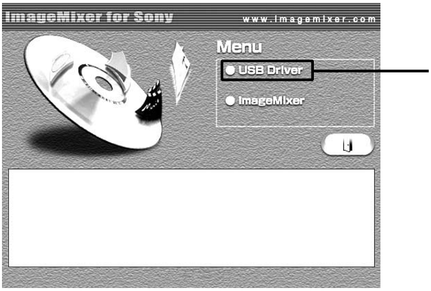
Installing the USB driver

For Mac OS 9.1/9.2/Mac OS X (v10.0/v10.1)
The USB driver does not have to be installed. Your camcorder is automatically recognized as a drive just by connecting it to your Mac using the USB cable.

For Mac OS 8.5.1/8.6/9.0 users

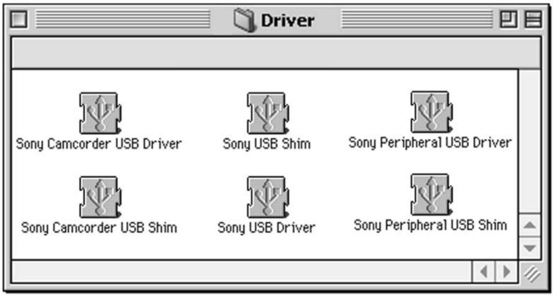
Do not connect the USB cable to your computer before installation of the USB driver is completed.

(1) Turn on your computer and allow the Mac OS to load.
(2) Insert the supplied CD-ROM in the CD-ROM drive of your computer.
The application software screen appears.
(3) Select “Handycam” on the screen.
The title screen appears.
(4) Click “USB Driver” to open the folder containing the six files related to “Driver.”


ImageMixer for Sony
www.imagemixer.com
Menu
USB Driver
ImageMixer

Click

(5) Select the following two files, and drag and drop them into the System Folder.
- Sony Camcorder USB Driver
- Sony Camcorder USB Shim


Driver
Sony Camcorder USB Driver
Sony USB Shim
Sony Peripheral USB Driver
Sony Camcorder USB Shim
Sony USB Driver
Sony Peripheral USB Shim

(6) When the message appears, click “OK.”
The USB driver is installed on your computer.
(7) Remove the CD-ROM from the computer.
(8) Restart your computer.

Viewing images recorded on a “Memory Stick” on your computer (Macintosh)

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Viewing images

Before operation

- You need to install the USB driver to view a “Memory Stick” images on your computer (p. 206).
- QuickTime 3.0 or later must be installed to play back moving pictures.

(1) Turn on your computer and allow Mac OS to load.
(2) Insert a “Memory Stick” into your camcorder, and connect the AC Adaptor to your camcorder.
(3) Set the POWER switch to MEMORY.
(4) Connect the ψ (USB) jack on your camcorder with the USB jack on your computer using the supplied USB cable.
“USB MODE” appears on the screen of your camcorder.
(5) Double-click the “Memory Stick” icon on the desktop.
The folders inside the “Memory Stick” are displayed.
(6) Double-click the desired image file from the folder in this order.
“Dcim” folder → “□□□msdcf” folder *1) → Image file *2)

*1) □□□ stands for any number (within the range) from 101 to 999.
*2) Copying a moving picture file to the hard disk of your computer before viewing it is recommended. If you play back the file directly from the “Memory Stick,” the image and sound may break off.

Disconnect the USB cable and remove the “Memory Stick” or set the POWER switch to OFF (CHG)

(1) Close all running applications.
Make sure that the access lamp of your camcorder is not lit.
(2) Drag the “Memory Stick” icon into the “Trash.” Alternatively, select the “Memory Stick” icon by clicking it, and then select “Eject disk” from the “Special” menu at the top left of the screen.
(3) Unplug the USB cable or eject the “Memory Stick.” Set the POWER switch of your camcorder to OFF (CHG).

For Mac OS X (v10.0) users

Shut down your computer, then unplug the USB cable, eject the “Memory Stick” or set the POWER switch to OFF (CHG).

Capturing images from an analog video unit on your computer – Signal convert function

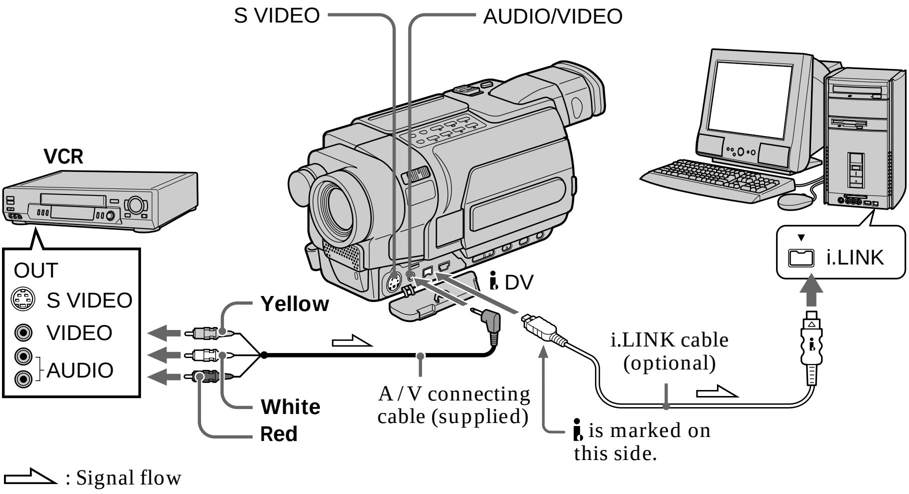
350 351

You can capture images and sound from an analog video unit on your computer which has the i.LINK connector by transmitting data via your camcorder.

Before operation

Set DISPLAY to LCD in the menu settings. (The default setting is LCD.)

(1) Set the POWER switch to VCR.
(2) Press MENU to display the menu settings.
(3) Turn the SEL / PUSH EXEC dial to set A / V → DV OUT in V to ON (p. 214).
(4) Start playback on the analog video unit.
(5) Start procedures for capturing images and sound on your computer.
The operation procedures depend on your computer and the software you are using.
For details on how to capture images, refer to the operating instructions of your computer and the software you are using.


S VIDEO
AUDIO/VIDEO
VCR
OUT
S VIDEO
VIDEO
AUDIO
Yellow
White
Red
A / V connecting cable (supplied)
DV
i.LINK
i.LINK cable (optional)
is marked on this side.
: Signal flow

After capturing images and sound

Stop capturing procedures on your computer, and stop playback on the analog video unit.

Notes

- You need the software and computer that support the exchange of digital video signals.
- Depending on the state of the analog video signals, your computer may not be able to output images correctly when you convert analog video signals into digital video signals via your camcorder.
- You cannot record or capture video output via your camcorder when the video tapes include copyright protection signals such as the ID-2 system.

If your computer has a USB jack

You can connect your camcorder to your computer using the USB cable supplied with your camcorder. Note, however, that the image may flicker.

If your VCR has an S video jack

Pictures can be reproduced more faithfully by using an S video cable (optional).
With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcorder and the VCR.

Changing the menu settings

To change the mode settings in the menu settings, select the menu items with the SEL / PUSH EXEC dial. The default settings can be partially changed. First, select the icon, then the menu item and then the mode.

(1) In CAMERA, VCR / PLAYER or MEMORY mode, press MENU to display the menu settings.*

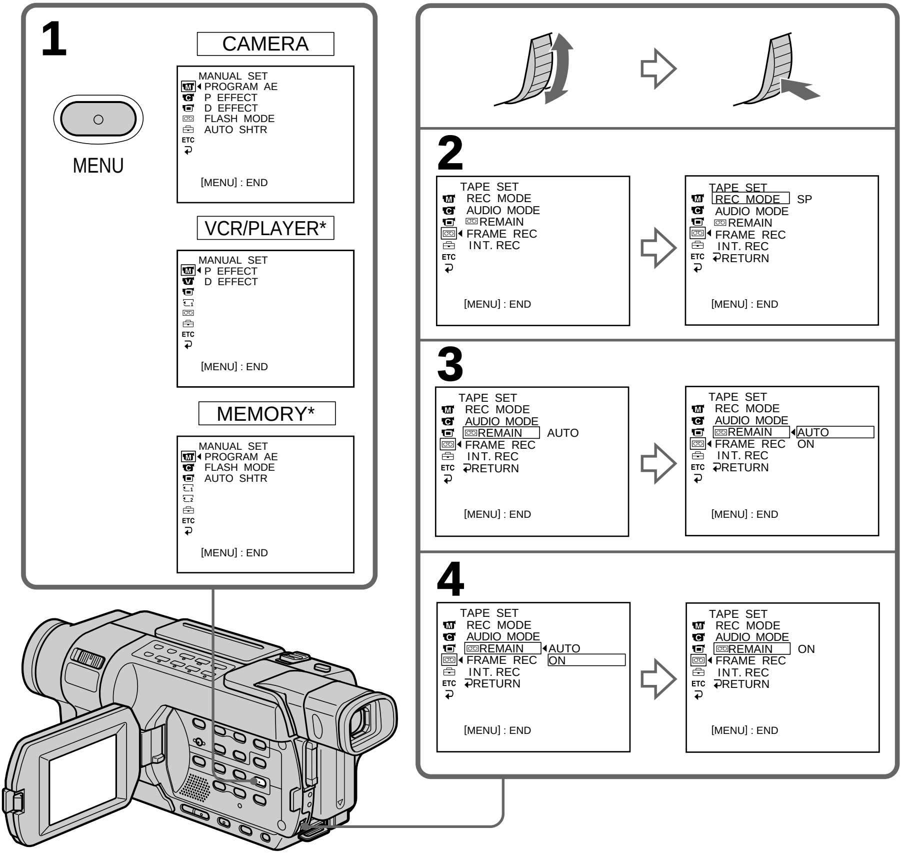
(2) Turn the SEL / PUSH EXEC dial to select the desired icon, then press the dial to set.

(3) Turn the SEL / PUSH EXEC dial to select the desired item, then press the dial to set.

(4) Turn the SEL / PUSH EXEC dial to select the desired mode, and press the dial to set.

(5) If you want to change other items, select ↵ RETURN and press the dial, then repeat steps from **(2)** to **(4)**.

For details, see “Selecting the mode setting of each item” (p. 211).


1
CAMERA
MANUAL SET
PROGRAM AE
P EFFECT
D EFFECT
FLASH MODE
AUTO SHTR
ETC
[MENU] : END
MENU
VCR/PLAYER*
MANUAL SET
P EFFECT
D EFFECT
ETC
[MENU] : END
MEMORY*
MANUAL SET
PROGRAM AE
FLASH MODE
AUTO SHTR
ETC
[MENU] : END
2
TAPE SET
REC MODE
AUDIO MODE
REMAIN
FRAME REC
INT. REC
ETC
[MENU] : END
TAPE SET
REC MODE SP
AUDIO MODE
REMAIN
FRAME REC
INT. REC
RETURN
[MENU] : END
3
TAPE SET
REC MODE
AUDIO MODE
REMAIN AUTO
FRAME REC
INT. REC
RETURN
[MENU] : END
TAPE SET
REC MODE
AUDIO MODE
REMAIN AUTO
FRAME REC ON
INT. REC
RETURN
[MENU] : END
4
TAPE SET
REC MODE
AUDIO MODE
REMAIN AUTO
FRAME REC ON
INT. REC
RETURN
[MENU] : END
TAPE SET
REC MODE
AUDIO MODE
REMAIN ON
FRAME REC
INT. REC
RETURN
[MENU] : END

---

* Modes on the POWER switch vary depending on models (p. 16).

To make the menu display disappear

Press MENU.

Menu items are displayed as the following icons:

- MANUAL SET
- CAMERA SET
- VCR SET 150 250 350 351
- PLAYER SET 118 318 418
- LCD SET
- MEM SET 1 350 351
- MEM SET 2 350 351
- TAPE SET
- SETUP MENU
- ETC OTHERS

Depending on your camcorder model

The menu display may be different from that in this illustration.

Selecting the mode setting of each item

● is the default setting.

Menu items differ depending on the position of the POWER switch.
The screen shows only the items you can operate at the moment.

Icon/item	Mode	Meaning	POWER switch *1)
MANUAL SET			
PROGRAM AE	—	To suit your specific shooting requirement (p. 68).	CAMERA MEMORY
P EFFECT (in recording)	—	To add special effects, like those in films or on TV, to images (p. 64).	CAMERA
P EFFECT (in playback) *2)	—	To add special effects, like those in films or on TV, to images (p. 83).	VCR
D EFFECT *3)	—	To add special effects using the various digital functions (p. 65, 85).	VCR CAMERA
FLASH MODE *3)	● ON	To fire the flash (optional) regardless of the brightness of the surroundings.	CAMERA MEMORY
	AUTO	To fire the flash automatically.	
AUTO SHTR *2)	● ON	To automatically activate the electronic shutter when shooting in bright conditions.	CAMERA MEMORY
	OFF	To not automatically activate the electronic shutter even when shooting in bright conditions.	

*1) Modes on the POWER switch vary depending on models (p. 16).
*2) 150 250 350 351
*3) 350 351

(continued on the following page)

Notes on FLASH MODE *3)

- You cannot adjust FLASH MODE if the external flash (optional) is not compatible with the FLASH MODE.
- You cannot adjust FLASH MODE if the external flash (optional) is not connected.

Note on AUTO SHTR *2)

The Auto Shutter function electronically adjusts the shutter speed.

*1) Modes on the POWER switch vary depending on models (p. 16).

*2) 150 250 350 351

*3) 350 351

Icon/item	Mode	Meaning	POWER switch *1)
CAMERA SET			
SELFTIMER *2)	● OFF	To not use the self-timer function.	CAMERA MEMORY
	ON	To use the self-timer function (p. 41, 55, 135, 149).	
D ZOOM *3)	● OFF	To deactivate the digital zoom. Up to 20× zoom is performed.	CAMERA
	40×	To activate the digital zoom. More than 20× to 40× zoom is performed digitally (p. 34).	
	560×	To activate the digital zoom. More than 20× to 560× zoom is performed digitally (p. 34).	
*4)	● OFF	To deactivate the digital zoom. Up to 20× zoom is performed.	CAMERA MEMORY
	40×	To activate the digital zoom. More than 20× to 40× zoom is performed digitally (p. 34).	
	700×	To activate the digital zoom. More than 20× to 700× zoom is performed digitally (p. 34).	
16:9WIDE *5)	● OFF	—	CAMERA
	ON	To record a 16:9 wide picture (p. 58).	
*6)	● OFF	—	CAMERA
	CINEMA	To record in the CINEMA mode (p. 59).	
	16:9FULL	To record in the 16:9FULL mode.	

*1) Modes on the POWER switch vary depending on models (p. 16).

*2) 350 351

*3) 118 318 418 150

*4) 250 350 351

*5) 150 250 350 351

*6) 118 318 418

*7) 318 418 150 250 350 351

Icon/item	Mode	Meaning	POWER switch *1)
CAMERA SET			
STEADYSHOT *7)	● ON	To compensate for camera-shake.	CAMERA MEMORY
	OFF	To cancel the SteadyShot function. Natural pictures are produced when shooting a stationary subject with a tripod.	
N.S.LIGHT	● ON	To use the NightShot Light function (p. 39).	CAMERA MEMORY
	OFF	To cancel the NightShot Light function.	

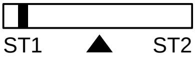
Notes on the SteadyShot function *7)

- The SteadyShot function will not correct excessive camera-shake.
- Attachment of a conversion lens (optional) may influence the SteadyShot function.

If you cancel the SteadyShot function *7)

The SteadyShot off indicator OFF appears on the screen. Your camcorder prevents excessive compensation for camera-shake.

*1) Modes on the POWER switch vary depending on models (p. 16).
*2) 350 351
*3) 118 318 418 150
*4) 250 350 351
*5) 150 250 350 351
*6) 118 318 418
*7) 318 418 150 250 350 351

Icon/item	Mode	Meaning	POWER switch *1)
V VCR SET 150 250 350 351			
P PLAYER SET 118 318 418			
HiFi SOUND *2)	● STEREO	To play back a stereo tape or dual sound track tape with main and sub sound (p. 238).	VCR
	1	To play back a stereo tape with the left sound or a dual sound track tape with main sound.	
	2	To play back a stereo tape with the right sound or a dual sound track tape with sub sound.	
EDIT *3)	● OFF	—	PLAYER
	ON	To minimize picture deterioration when editing.	
TBC *4) *5)	● ON	To correct jitter.	VCR/ PLAYER
	OFF	To not correct jitter. Set TBC to OFF when playing back a tape on which you have dubbed over and recorded the signal of a TV game or similar machine.	
TBC stands for “Time Base Corrector.”			
DNR *4) *5)	● ON	To reduce picture noise.	VCR/ PLAYER
	OFF	To reduce a conspicuous afterimage when the picture has a lot of movement.	
DNR stands for “Digital Noise Reduction.”			
AUDIO MIX *2)	—	To adjust the balance between the stereo 1 and stereo 2.  	VCR
A/V → DV OUT *6)	● OFF	To output digital images and sound in analog format using your camcorder.	VCR
	ON	To output analog images and sound in digital format using your camcorder (p. 208).	

*1) Modes on the POWER switch vary depending on models (p. 16).

*2) 150 250 350 351

*3) 118 318 418

*4) 118 318 418 350 351

*5) When you play back tapes recorded in the Hi8 Hi8/standard 8 mm 8 system only

*6) 350 351

Icon/item	Mode	Meaning	POWER switch *1)
V VCR SET 150 250 350 351			
P PLAYER SET 118 318 418			
PB MODE *6)	● AUTO	To automatically select the system (Hi8 Hi8/ standard 8 mm 8 or Digital8 8) that was used to record on the tape, and play back the tape.	VCR
	Hi8/8	To play back a tape that was recorded in the Hi8 Hi8/standard 8 mm 8 system when your camcorder does not automatically distinguish the recording system.	

After five minutes of removing the power source

The HiFi SOUND *2), EDIT *3) and AUDIO MIX *2) items are returned to their default settings.

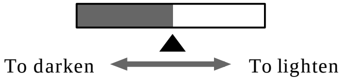
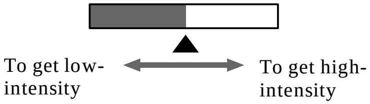
Notes on AUDIO MIX *2)

- You can adjust the balance only for tapes recorded in the Digital8 8 system. 350 351
- When playing back a tape recorded in the 16-bit mode, you cannot adjust the balance.

Note on PB MODE *6)

The mode will return to the default setting when:
– you remove the power source.
– you turn the POWER switch.

*1) Modes on the POWER switch vary depending on models (p. 16).
*2) 150 250 350 351
*3) 118 318 418
*4) 118 318 418 350 351
*5) When you play back tapes recorded in the Hi8 Hi8/standard 8 mm 8 system only
*6) 350 351

Icon/item	Mode	Meaning	POWER switch *
LCD SET			
LCD BRIGHT	—	To adjust the brightness on the LCD screen with the SEL / PUSH EXEC dial.  	VCR / PLAYER CAMERA MEMORY
LCD B.L.	● BRT NORMAL	To set the brightness of the LCD screen backlight to normal.	VCR / PLAYER CAMERA MEMORY
	BRIGHT	To brighten the LCD screen backlight.	
LCD COLOR	—	To adjust the color on the LCD screen, turning the SEL / PUSH EXEC dial to adjust the following bar.  	VCR / PLAYER CAMERA MEMORY

Notes on LCD B.L.

- When you select BRIGHT, battery life is reduced by about 10 percent during recording.
- When you use power sources other than the battery pack, BRIGHT is automatically selected.

Even if you adjust LCD BRIGHT, LCD B.L., LCD COLOR

The recorded picture will not be affected.

* Modes on the POWER switch vary depending on models (p. 16).

Icon/item	Mode	Meaning	POWER switch
MEM SET 1 350 351			
STILL SET			
QUALITY	● FINE	To record still images in fine image quality mode (p. 128).	VCR MEMORY
	STANDARD	To record still images in standard image quality mode.	
FLD/FRAME	● FIELD	To record moving subjects correcting jitter (p. 132).	MEMORY
	FRAME	To record stationary subjects in high quality.	
MOVIE SET			
IMAGESIZE	● 320 × 240	To record moving pictures in 320 × 240 size (p. 130).	VCR MEMORY
	160 × 112	To record moving pictures in 160 × 112 size.	
REMAIN	● AUTO	To display the remaining capacity of the "Memory Stick" in the following cases: • For five seconds after you set the POWER switch to VCR or MEMORY. • For five seconds after inserting a "Memory Stick" into your camcorder. • When the capacity of the "Memory Stick" is less than a few minutes in MEMORY mode. • For five seconds after you start recording a moving picture. • For five seconds after you stop recording a moving picture.	VCR MEMORY
	ON	To always display the remaining capacity of the "Memory Stick."	
NEW FOLDER	● ADD	To create a new folder (p. 160).	MEMORY
	RETURN	To cancel creating a new folder.	
REC FOLDER	—	To select a folder in which images are recorded (p. 162).	MEMORY
FILE NO.	● SERIES	To assign numbers to files in sequence even if the "Memory Stick" is changed. However, when a new folder is created or the recording folder is changed, the file number sequence is reset.	VCR MEMORY
	RESET	To reset the file numbering each time the "Memory Stick" is changed.	
PRINT MARK	ON	To write a print mark on recorded still images you want to print out later (p. 180).	VCR MEMORY
	● OFF	To cancel print marks on still images.	
PROTECT	ON	To protect selected images against accidental erasure (p. 176).	VCR MEMORY
	● OFF	To not protect images.	
PB FOLDER	—	To select a folder that contains images to be played back (p. 169).	MEMORY

Icon/item	Mode	Meaning	POWER switch
MEM SET 2 350 351			
SLIDE SHOW	RETURN	To cancel the slide show.	MEMORY
	● ALL FILES	To play back all images in the “Memory Stick” continuously (p. 174).	
	FOLDER □□□ *1)	To play back all images in the current PB folder continuously.	
INT.R -STL	ON	To activate the interval photo recording function (p. 154).	MEMORY
	● OFF	To deactivate the interval photo recording function.	
	SET	To set INTERVAL for interval photo recording.	
DELETE ALL	● RETURN	To cancel deleting all images.	MEMORY
	ALL FILES	To delete all unprotected images in the “Memory Stick” (p. 178).	
	FOLDER □□□ *1)	To delete all unprotected images in the current PB folder.	
FORMAT	● RETURN	To cancel formatting.	MEMORY
	OK	To format an inserted “Memory Stick.” **Formatting erases all information on a “Memory Stick.”** 1. Select FORMAT with the SEL / PUSH EXEC dial, then press the dial. 2. Select OK with the SEL / PUSH EXEC dial, then press the dial. 3. After EXECUTE appears, press the SEL / PUSH EXEC dial. The FORMATTING indicator flashes during formatting. The COMPLETE indicator appears when formatting is finished.	

Notes on formatting

- Formatting erases all folders.
- Formatting erases all images even if they are protected.
- The supplied “Memory Stick” has been formatted at factory. Formatting the “Memory Stick” on your camcorder is not required.*2)
- Do not do any of the following while the FORMATTING indicator is displayed:
  - Switch the POWER switch
  - Operate buttons
  - Eject the “Memory Stick”
  - Remove the power source
- You cannot format the “Memory Stick” if the write-protect tab on the “Memory Stick” is set to LOCK.
- Format the “Memory Stick” when “FORMAT ERROR” is displayed.

*1) □□□ stands for the folder number.

*2) 351

Icon/item	Mode	Meaning	POWER switch *1)
📼 TAPE SET			
REC MODE	● SP	To record in the SP (Standard Play) mode.	VCR CAMERA
	LP	To increase the recording time to 1.5 *2)/2 *3) times the SP mode.	
AUDIO MODE *2)	● 12BIT	To record in the 12-bit mode (two stereo sounds).	VCR *4) CAMERA
	16BIT	To record in the 16-bit mode (one stereo sound with high quality).	
ORC TO SET *3)	—	To automatically adjust the recording condition to get the best possible recording. Press START/STOP to start adjustment. Your camcorder takes about 10 seconds to check the tape condition and then returns to the standby mode.	CAMERA
ORC stands for "Optimizing the Recording Condition."			
📼 REMAIN	● AUTO	To display the remaining tape bar: • For about eight seconds after your camcorder is turned on and calculates the remaining amount of tape. • For about eight seconds after a cassette is inserted and your camcorder calculates the remaining amount of tape. • For about eight seconds after ▶ is pressed in VCR/PLAYER mode. • For about eight seconds after DISPLAY is pressed to display the screen indicators. • For the period of tape rewinding, forwarding or picture search in VCR/PLAYER mode.	VCR/ PLAYER CAMERA
	ON	To always display the remaining tape bar.	
FRAME REC *2)	● OFF	To deactivate the frame recording.	CAMERA
	ON	To activate the frame recording (p. 74).	
INT. REC *2)	ON	To activate the interval recording function (p. 72).	CAMERA
	● OFF	To deactivate the interval recording function.	
	SET	To set INTERVAL and REC TIME for interval recording.	

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*1) Modes on the POWER switch vary depending on models (p. 16).
*2) 150 250 350 351
*3) 118 318 418
*4) 350 351

(continued on the following page)

Notes on the LP mode

- When you record a tape in the LP mode on your camcorder, we recommend playing back the tape on your camcorder. When you playback the tape recorded on another camcorder or VCR, noise may occur in images or sounds.
- When you record in the LP mode, we recommend using a Sony cassette so that you can get the most out of your camcorder.
- When you record in the SP and LP modes on one tape or you record some scenes in the LP mode, the playback picture may be distorted or the time code may not be written properly between scenes.*2)
- Noise may occur also when you play back on your camcorder tapes recorded in the LP mode on another camcorder or VCR.*3)
- When you record a tape in the LP mode on your camcorder, recording is carried out in the standard 8 mm 8 system.*3)

Note on AUDIO MODE *2)

When playing back a tape recorded in the 16-bit mode, you cannot adjust the balance in AUDIO MIX.

Note on dubbing a tape to another VCR *4)

You cannot select AUDIO MODE for tapes recorded in the Digital8 D system. You, however, can select AUDIO MODE when you dub tapes recorded in the Hi8 Hi8/ standard 8 mm 8 system to another VCR using the i.LINK cable.

Notes on ORC setting *3)

- Each time you eject the cassette, the ORC setting will be canceled. If necessary, set the setting.
- You cannot use this setting on a tape with the red mark on the cassette exposed. (i. e. the tape is write-protected)
- When you set ORC TO SET, a non-recorded section of about 0.1 seconds appears on the tape. However, note that this non-recorded section disappears from the tape when you continue recording from this section.
- To check if you have already set the ORC setting, select ORC TO SET in the menu settings. “ORC ON” is displayed if ORC TO SET is already set.

*1) Modes on the POWER switch vary depending on models (p. 16).
*2) 150 250 350 351
*3) 118 318 418
*4) 350 351

Icon/item	Mode	Meaning	POWER switch *1)
SETUP MENU			
CLOCK SET	—	To set the date or time (p. 26).	CAMERA MEMORY
AUTO DATE *2)	● ON	To record the date for 10 seconds after recording has started.	CAMERA
	OFF	To cancel the auto date function.	
USB STREAM *3)	● OFF	To deactivate the USB Streaming function.	VCR CAMERA
	ON	To activate the USB Streaming function.	
LTR SIZE	● NORMAL	To display selected menu items in normal size.	VCR/ PLAYER CAMERA MEMORY
	2×	To display selected menu items at twice the normal size.	
LANGUAGE	● ENGLISH	To display the information indicators in English.	VCR/ PLAYER CAMERA MEMORY
	FRANÇAIS	To display the some of the information indicators in French.	
	ESPAÑOL	To display the some of the information indicators in Spanish.	
	PORTUGUÊS	To display the some of the information indicators in Portuguese.	
	中文	To display the some of the information indicators in Chinese.	
	한국어	To display the some of the information indicators in Korean.	
DEMO MODE	● ON	To make the demonstration appear.	CAMERA
	OFF	To cancel the demonstration mode.	

Notes on DEMO MODE

- You cannot select DEMO MODE when a "Memory Stick" is inserted in your camcorder.*4)
- You cannot select DEMO MODE when a cassette is inserted in your camcorder.
- The DEMO MODE default setting is STBY (Standby), and the demonstration starts about 10 minutes after you have set the POWER switch to CAMERA without a cassette inserted.
  To cancel the demonstration, insert a "Memory Stick"*4) or a cassette, set the POWER switch to anything other than CAMERA, or set DEMO MODE to OFF. To set to STBY (Standby) again, leave the DEMO MODE at ON in the menu settings, turn the POWER switch to OFF (CHG), and return the POWER switch to CAMERA.
- When NIGHTSHOT is set to ON, "NIGHTSHOT" appears on the screen and you cannot select DEMO MODE in the menu settings.

*1) Modes on the POWER switch vary depending on models (p. 16).

*2) 118 318 418

*3) 250 350 351

*4) 350 351

Icon/item	Mode	Meaning	POWER switch *1)
ETC OTHERS			
DATA CODE *2)	● DATE/CAM	To display date, time and recording data during playback.	VCR MEMORY
	DATE	To display date and time during playback.	
WORLD TIME	—	To set the clock to the local time. Turn the SEL/PUSH EXEC dial to set a time difference. The clock changes by the time difference you set here. If you set the time difference to 0, the clock returns to the originally set time.	CAMERA MEMORY
BEEP	● MELODY	To output the melody when you start/stop recording or when an unusual condition occurs on your camcorder.	VCR/ PLAYER CAMERA MEMORY
	NORMAL	To output the beep instead of the melody.	
	OFF	To cancel all sound including shutter sound.	
COMMANDER *3)	● ON	To activate the Remote Commander supplied with your camcorder.	VCR/ PLAYER CAMERA MEMORY
	OFF	To deactivate the Remote Commander to avoid erroneous remote control operation caused by other VCR's remote control.	
DISPLAY	● LCD	To show the display on the LCD screen and in the viewfinder.	VCR/ PLAYER CAMERA MEMORY
	V-OUT/LCD	To show the display on the TV screen, LCD screen and in the viewfinder.	
REC LAMP	● ON	To light up the camera recording lamp at the front of your camcorder.	CAMERA MEMORY
	OFF	To turn the camera recording lamp off so that the person is not aware of the recording.	

*1) Modes on the POWER switch vary depending on models (p. 16).

*2) 250 350 351

*3) 418 250 350 351

*4) 350 351

*5) 150 250

Icon/item		Mode	Meaning	POWER switch *1)
ETC **OTHERS**				
VIDEO EDIT	*4)	● RETURN	To cancel video editing.	VCR
		TAPE	To make a program and perform video editing (p. 106).	
		MEMORY	To make a program and perform MPEG editing (p. 156).	
	*5)	—	To make a program and perform video editing (p. 106).	VCR

Note *4)
If you press DISPLAY with DISPLAY set to V-OUT/LCD in the menu settings, the picture from a TV or VCR will not appear on the screen even when your camcorder is connected to outputs on the TV or VCR. (Except when your camcorder is connected with the i.LINK cable)

After five minutes of removing the power source *3)
The COMMANDER item returns to their default settings.

When recording a close subject
When REC LAMP is set to ON, the red camera recording lamp on the front of the camcorder may reflect on the subject if it is close. In this case, we recommend that you set REC LAMP to OFF.

*1) Modes on the POWER switch vary depending on models (p. 16).
*2) 250 350 351
*3) 418 250 350 351
*4) 350 351
*5) 150 250

Types of trouble and how to correct trouble

If you run into any problem using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer or local authorized Sony service facility. If “C:□□:□□” appears on the screen, the self-diagnosis display function has worked. See page 232.

In the recording mode

Symptom	Cause and/or Corrective Action
START/STOP does not operate.	• The POWER switch is not set to CAMERA. → Set it to CAMERA (p. 30). • The tape has run out. → Rewind the cassette or insert a new one (p. 28, 45). • The write-protect tab is set to expose the red mark. → Use a new tape or slide the tab (p. 29). • The tape is stuck to the drum (moisture condensation). → Remove the cassette and leave your camcorder for at least one hour to acclimatize (p. 247).
The power goes off.	• While being operated in CAMERA mode, your camcorder has been in the standby mode for more than three minutes *1)/five minutes *2). → Set the POWER switch to OFF (CHG) and then to CAMERA again (p. 30). • The battery pack is dead or nearly dead. → Install a charged battery pack (p. 18, 19).
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens (p. 35).
The SteadyShot function does not work.*3)	• STEADYSHOT is set to OFF in the menu settings. → Set it to ON (p. 213). • 16:9WIDE is set to ON in the menu settings.*1) → Set it to OFF (p. 212). • 16:9WIDE is set to 16:9FULL.*2) → Set it to OFF (p. 212).
The autofocusing function does not work.	• The setting is the manual focus mode. → Set the autofocus mode (p. 71). • Shooting conditions are not suitable for autofocus. → Adjust to focus manually (p. 71).
The ⊗ indicator flashes in the viewfinder.	• The video heads may be dirty. → Clean the heads using the Sony V8-25CLD cleaning cassette (optional) (p. 248).

*1) 150 250 350 351
*2) 118 318 418
*3) 318 418 150 250 350 351
*4) 350 351

Types of trouble and how to correct trouble

Symptom	Cause and/or Corrective Action
The picture does not appear in the viewfinder.	• The LCD panel is open. → Close the LCD panel when you do not record using the LCD screen (p. 32).
A vertical band appears when you shoot a subject such as lights or a candle flame against a dark background.	• The contrast between the subject and background is too high. This is not a malfunction.
A vertical band appears when you shoot a very bright subject.	• The smear phenomenon is occurring. This is not a malfunction.
Some tiny white, red, blue or green spots appear on the screen.*4)	• Slow shutter, Super NightShot or Color Slow Shutter mode is activated. This is not a malfunction.
An unknown picture is displayed on the screen.	• If 10 minutes passes after you set the POWER switch to CAMERA or DEMO MODE is set to ON in the menu settings without a “Memory Stick” *4) or a cassette inserted, your camcorder automatically starts the demonstration. → Insert a “Memory Stick” *4) or a cassette and the demonstration stops. You can also cancel DEMO MODE (p. 221).
The picture is recorded in incorrect or unnatural colors.	• NIGHTSHOT is set to ON. → Set it to OFF (p. 39).
Picture appears too bright, and the subject does not appear on the screen.	• NIGHTSHOT is set to ON in a bright place. → Set it to OFF (p. 39). • The backlight function is active. → Deactivate the backlight function (p. 38).
The shutter does not sound.*4)	• BEEP is set to OFF in the menu settings. → Set it to MELODY or NORMAL (p. 222).
A horizontal black band appears when shooting a TV screen or a computer screen.*3)	• Set STEADYSHOT to OFF in the menu settings (p. 213).
An external flash (optional) does not work.*4)	• The power of the external flash is off or the power source is not installed. → Turn on the external flash or install the power source. • AUTO is selected in FLASH MODE in the menu settings while recording in a bright place. → Set it to ON (p. 211).

*1) 150 250 350 351
*2) 118 318 418
*3) 318 418 150 250 350 351
*4) 350 351

Types of trouble and how to correct trouble

In the playback mode

Symptom	Cause and/or Corrective Action
The picture does not appear on the screen when playing back a tape.*1)	• The tape is recorded in the Hi8 Hi8/Standard 8 mm 8 system.
The tape does not move when a video control button is pressed.	• The POWER switch is set to MEMORY, CAMERA or OFF (CHG).*2) → Set it to VCR/PLAYER *2) (p. 45).
The playback button does not work.	• The cassette has run out of tape. → Rewind the tape (p. 45).
There are horizontal lines on the picture. The playback picture is not clear or does not appear.	• The television's video channel is not adjusted correctly. → Adjust it *3) (p. 51). • EDIT is set to ON in the menu settings. → Set it to OFF *3) (p. 214). • The video head may be dirty. → Clean the heads using the Sony V8-25CLD cleaning cassette (optional) (p. 248).
No sound or only a low sound is heard when playing back a tape.	• The stereo tape is played back with HiFi SOUND set to 2 in the menu settings.*4) → Set it to STEREO (p. 214). • The volume is turned to minimum. → Press VOLUME + (p. 45). • AUDIO MIX is set to the ST2 side in the menu settings.*4) → Adjust AUDIO MIX (p. 214).
The date search does not work correctly.*5)	• The tape has a blank portion between recorded portions (p. 90).
The picture which is recorded in the Digital8 system is not played back.*6)	• PB MODE is set to Hi8/8 in the menu settings. → Set it to AUTO (p. 215).
The tape which is recorded in the Hi8 Hi8/standard 8 mm 8 system is not played back correctly.*6)	→ Set PB MODE to Hi8/8 in the menu settings (p. 215).
"PAL" is displayed on the screen.*4)	• The TV color system recorded on the tape is different from that of your camcorder.

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*1) 150 250
*2) Modes on the POWER switch vary depending on models (p. 16).
*3) 118 318 418
*4) 150 250 350 351
*5) 250 350 351
*6) 350 351

Types of trouble and how to correct trouble

In the recording and playback modes

Symptom	Cause and/or Corrective Action
Your camcorder does not function even when the POWER switch is set to a position other than OFF (CHG).	• The battery pack is not installed, or is dead or nearly dead. → Install a charged battery pack (p. 18, 19). • The AC Adaptor is not connected to a wall outlet. → Connect the AC Adaptor to a wall outlet (p. 24).
The end search function does not work.	• The tape was ejected after recording. • You have not recorded on the new cassette yet.
The end search function does not work correctly.	• The tape has a blank portion at the beginning or midway.
The battery pack is quickly discharged.	• The operating temperature is too low. • The battery pack is not charged enough. → Charge the battery pack fully again (p. 19). • The battery pack is completely dead, and cannot be recharged. → Replace with a new battery pack (p. 18).
The remaining battery time indicator does not indicate the correct time.	• You have used the battery pack in an extremely hot or cold environment for a long time. • The battery pack is completely dead, and cannot be recharged. → Replace with a new battery pack (p. 18). • The battery is dead. → Use a fully charged battery pack (p. 18, 19). • A deviation has occurred in the remaining battery time. → Charge the battery pack fully so that the remaining battery time indicator indicates correct time (p. 19).
The power goes off although the remaining battery time indicator indicates that the battery pack has enough power to operate.	• A deviation has occurred in the remaining battery time. → Charge the battery pack fully so that the remaining battery time indicator indicates correct time (p. 19).
The cassette cannot be removed from the holder.	• The power source is disconnected. → Connect it firmly (p. 18, 24). • The battery is dead. → Use a charged battery pack (p. 18, 19).
The 💧 and ⏏ indicators flash and no functions except for cassette ejection work.	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least one hour to acclimatize (p. 247).
The remaining tape indicator is not displayed.	• The 📼 REMAIN is set to AUTO in the menu settings. → Set it to ON to always display the remaining tape indicator.

When operating using the “Memory Stick” 350 351

Symptom	Cause and/or Corrective Action
The “Memory Stick” does not function.	• The POWER switch is not set to MEMORY. → Set it to MEMORY (p. 132). • The “Memory Stick” is not inserted. → Insert a “Memory Stick” (p. 127).
Recording does not function.	• The “Memory Stick” is full. → Delete unnecessary images and record again (p. 177). • The “Memory Stick” formatted incorrectly is inserted. → Format the “Memory Stick” on your camcorder or use another “Memory Stick” (p. 127, 218). • The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock (p. 240).
An image cannot be deleted.	• The image is protected. → Cancel image protection (p. 176). • The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock (p. 240).
You cannot format a “Memory Stick.”	• The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock (p. 240).
Deleting all the images cannot be carried out.	• The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock (p. 240).
You cannot protect an image.	• The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock (p. 240). • The image to protect is not played back. → Press MEMORY PLAY to play back the image (p. 163).
You cannot write a print mark on a still image.	• The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock (p. 240). • The image to write a print mark to is not played back. → Press MEMORY PLAY to play back the image (p. 163). • You are trying to write a print mark on a moving picture. → Print marks cannot be written on a moving picture.
You cannot play back images in actual size.	• You may not be able to play back images in actual size when you try to play back images recorded by other equipment. This is not a malfunction.
You cannot play back image data.	• Folders/files renamed or images processed with your computer may not be played back. (The file name will blink.) • If you record images with any other equipment, the images may not play back normally on your camcorder.

Others

Symptom	Cause and/or Corrective Action
Easy Dubbing does not function.*1)	• Your VCR and/or video camera recorder is not set correctly. → Make sure the input selector of the VCR is set to LINE. Also, make sure the power switch of the video camera is set to VTR/VCR (p. 99). • The IR SETUP code or PAUSE MODE is not set correctly. → Select the correct IR SETUP code and PAUSE MODE, according to your VCR. Then confirm VCR operation with the IR TEST function (p. 99).
Digital program editing to a tape does not function.*2)	• The input selector on the VCR is not set correctly. → Check the connection and set the input selector on the VCR again (p. 107). • Your camcorder is connected to DV equipment of other than Sony using the i.LINK cable. → Set it to IR (p. 107). • You have attempted to set a program on a blank portion of the tape. → Set the program again on a recorded portion (p. 115). • Your camcorder and the VCR are not synchronized. → Adjust the synchronization (p. 113). • The IR SETUP code is incorrect. → Set the correct code (p. 101). • PB MODE is set to Hi8/8 in the menu settings.*3) → Set it to AUTO (p. 215).
Digital program editing to a "Memory Stick" does not function.*3)	• Setting program on a blank portion of the tape is attempted. → Set the program again on a recorded portion (p. 156).
The Remote Commander supplied with your camcorder does not work.*4)	• COMMANDER is set to OFF in the menu settings. → Set it to ON (p. 222). • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are inserted with + and – incorrectly matching + and – inside the battery compartment. → Insert the batteries correctly (p. 264). • The batteries are dead. → Insert new ones (p. 264).

*1) 118 318 418
*2) 150 250 350 351
*3) 350 351
*4) 418 250 350 351
*5) 250 350 351

(continued on the following page)

Symptom	Cause and/or Corrective Action
The picture from a TV or VCR does not appear on the screen even when your camcorder is connected to the outputs of other equipment (connected with the A/V cable).*3)	• DISPLAY is set to V-OUT/LCD in the menu settings. ➔ Set it to LCD (p. 222).
The melody or beep sounds for five seconds.	• Moisture condensation has occurred. ➔ Eject the cassette and leave your camcorder for at least one hour to acclimatize (p. 247). • Some trouble has occurred in your camcorder. ➔ Eject the cassette and insert it again, then operate your camcorder.
You cannot charge the battery pack.	• The POWER switch is not set to OFF (CHG). ➔ Set it to OFF (CHG).
The BATTERY INFO is not displayed.	• The POWER switch is not set to OFF (CHG). ➔ Set it to OFF (CHG). • The battery pack is not installed properly. ➔ Install it properly (p. 18). • The battery pack is fully discharged. ➔ Install a fully charged battery pack.
No function works though the power is on.	➔ Disconnect the power cord of the AC Adaptor or remove the battery, then reconnect it in about one minute. Turn the power on. If the functions still do not work, open the LCD panel and press the RESET button using a sharp-pointed object. (If you press the RESET button, all the settings including the date and time return to their defaults.) (p. 258)
You cannot install the USB driver.*5)	• Your camcorder was connected to your computer with the USB cable before installing the USB driver, so the driver was not recognized by the computer. ➔ Uninstall the unrecognized driver, and then reinstall the driver (p. 194).

*1) 118 318 418
*2) 150 250 350 351
*3) 350 351
*4) 418 250 350 351
*5) 250 350 351

Types of trouble and how to correct trouble

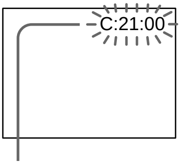
Symptom	Cause and/or Corrective Action
USB Streaming does not work.*5)	• The USB driver is not installed correctly. → Uninstall the unrecognized driver, and then reinstall the driver (p. 194). • Your computer's operating system is Windows 98 or earlier. • USB STREAM is set to OFF in the menu settings. → Set it to ON. • USB Streaming does not work when: – you record MPEG movie on a "Memory Stick."*3) – you record a photo on a "Memory Stick."*3)
Image data cannot be transferred by the USB connection.*5)	• The USB cable was connected before installation of the USB driver was completed. → Uninstall the incorrect USB driver and reinstall the USB driver (p. 194).
The cassette cannot be removed even if the cassette lid is open.	• Moisture has started to condense in your camcorder (p. 247).

*1) 118 318 418
*2) 150 250 350 351
*3) 350 351
*4) 418 250 350 351
*5) 250 350 351

Self-diagnosis display

Your camcorder has a self-diagnosis display function.
This function displays the current state of your camcorder as a 5-digit code (a combination of a letter and numbers) on the screen.
If a 5-digit code is displayed, check the following list of codes. The last two digits (indicated by □□) differ depending on the state of your camcorder.

LCD screen or viewfinder



Self-diagnosis display

- C:□□:□□
  You can service your camcorder yourself.
- E:□□:□□
  Contact your Sony dealer or local authorized Sony service facility.

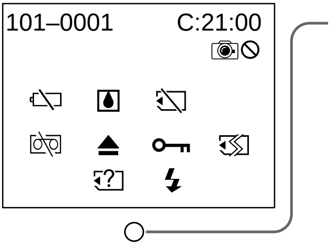
5-digit display	Cause and/or Corrective Action
C:04:□□	• You are using a battery pack that is not an "InfoLITHIUM" battery pack. ➔ Use an "InfoLITHIUM" battery pack (p. 21, 242).
C:21:□□	• Moisture condensation has occurred. ➔ Eject the cassette and leave your camcorder for at least one hour to acclimatize (p. 247).
C:22:□□	• The video heads are dirty. ➔ Clean the heads using the Sony V8-25CLD cleaning cassette (optional) (p. 248).
C:31:□□ C:32:□□	• A malfunction other than the above that you can service has occurred. ➔ Eject the cassette and insert it again, then operate your camcorder. ➔ Disconnect the power cord of the AC Adaptor or remove the battery pack. After reconnecting the power source, operate your camcorder.
E:20:□□ E:61:□□ E:62:□□	• A malfunction that you cannot service has occurred. ➔ Contact your Sony dealer or local authorized Sony service facility and inform them of the 5-digit code. (e.g. E:61:10)

If you are unable to rectify the problem even if you try corrective actions several times, contact your Sony dealer or local authorized Sony service facility.

Warning indicators and messages

If indicators and messages appear on the screen, check the following.
See the page in parentheses "( )" for more information.

Warning indicators



Tape/Battery pack warning indicator

Slow flashing:
- The battery pack is nearly dead.
- The tape is near the end.

Fast flashing:
- The battery pack is dead.
- The tape has run out.*

101-0001 **Warning indicator as to file** **350** **351**

Slow flashing:
- The file is corrupted.
- The file is unreadable.
- You are trying to use the MEMORY MIX function on a moving picture (p. 140).

C:21:00 **Self-diagnosis display** (p. 232)

Warning indicator as to battery

Slow flashing:
- The battery is nearly dead.
  The indicator sometimes flashes even if the remaining battery time is about five to 10 minutes depending on the operating conditions, environment and battery condition.

Fast flashing:
- The battery pack is dead.
- The battery pack is completely dead, and cannot be charged.

Moisture condensation has occurred *

Fast flashing:
- Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette compartment open (p. 247).

Warning indicator as to tape

Slow flashing:
- The remaining tape becomes shorter than the length for five-minute recording.
- No tape is inserted.*
- The write-protect tab on the cassette is set to LOCK (red) * (p. 29).

Fast flashing:
- The cassette has run out of tape.*

Warning indicator as to incompatible "Memory Stick"* **350** **351**

Slow flashing:
- An incompatible "Memory Stick" is inserted.

* You hear the melody or beep.

⏏ You need to eject the cassette *

Slow flashing:

- The write-protect tab on the cassette is set to LOCK (red) (p. 29).

Fast flashing:

- Moisture condensation has occurred (p. 247).
- The cassette has run out of tape.
- The self-diagnosis display function is activated (p. 232).

Warning indicator as to “Memory Stick” 350 351

Slow flashing:

- No “Memory Stick” is inserted.

Fast flashing *:

- The “Memory Stick” is not readable on your camcorder (p. 126).
- The image cannot be recorded on a “Memory Stick.”

Warning indicator as to “Memory Stick” formatting * 350 351

Fast flashing:

- “Memory Stick” data is corrupted (p. 240).
- “Memory Stick” is not formatted correctly (p. 218).

The image is protected * 350 351

Slow flashing:

- The image is protected (p. 176).

⚡ Warning indicator as to the flash (optional) 350 351

Fast flashing:

- There is something wrong with the external flash. (optional)

Warning indicator as to still image recording

Slow flashing:

- The still image cannot be recorded on the “Memory Stick” 350 351 (p. 53).
- The still image cannot be recorded on the tepe 150 250 (p. 56).

* You hear the melody or beep.

Warning messages

• CLOCK SET	Set the date and time (p. 26).
• FOR “InfoLITHIUM” BATTERY ONLY	Use an “InfoLITHIUM” battery pack (p. 242).
• 📼 ⏏ TAPE END	The cassette has run out of tape.*
• 📼 NO TAPE	Insert a cassette tape.*
• 📼 CLEANING CASSETTE	The video heads are dirty. (The ⊗ indicator and “📼 CLEANING CASSETTE” message appear one after another on the screen.)* (p. 248)
• COPY INHIBIT 150 250 350 351	You tried to record a picture that has a copyright control signal * (p. 238).
• START / STOP KEY 118 318 418	Press START / STOP to activate the ORC setting. This message is displayed in white (p. 219).
• ORC 118 318 418	ORC is working. This message is displayed in white (p. 219).
• ϟ NOW CHARGING 350 351	Charging an external flash (optional) does not work correctly.*

* You hear the melody or beep.

Warning messages as to “Memory Stick” 350 351

You hear the melody or beep.

FULL	The “Memory Stick” is full (p. 131).
FOLDER NO. FULL	Folders have already been created in the “Memory Stick” up to the limit (up to the folder 999 MSDCF) (p. 161).
🔑	The write-protect tab on the “Memory Stick” is set to LOCK (p. 240).
NO FILE	No still image is recorded on the “Memory Stick.”
NO MEMORY STICK	No “Memory Stick” is inserted.
AUDIO ERROR	You are trying to record an image with sound that cannot be recorded by your camcorder on “Memory Stick” (p. 151).
MEMORY STICK ERROR	The “Memory Stick” data is corrupted (p. 127).
FORMAT ERROR	Check the type of the “Memory Stick” format (p. 218).
PLAY ERROR	The image cannot be played back. Reinsert the “Memory Stick,” then play back the image again.
REC ERROR	Check the input signal before retrying recording (p. 139, 153).
INCOMPATIBLE MEMORY STICK	The “Memory Stick” inserted is not compatible with your camcorder.
DELETING	You have pressed PHOTO during deleting all images on “Memory Stick.”
FORMATTING	You have pressed PHOTO during formatting a “Memory Stick.”
NO FILE AVAILABLE	No file is in the current PB folder (p. 169).
USB STREAMING ON GOING	You cannot carry out any “Memory Stick” operations during USB Streaming (p. 200).
READ-ONLY MEMORY STICK	The 100MSDCF is only for playback (p. 162).

— Additional Information —

About video cassette

Usable cassette tapes and Recording / Playback systems

350 351

Usable cassette tapes	Hi8 Hi8 / Digital8 8 (recommended)	Standard 8 mm 8 *1)
Recording system	Digital8 8	
Playback system *2)	Digital8 8	
	Hi8 Hi8	Standard 8 mm 8

150 250

Usable cassette tapes	Hi8 Hi8 / Digital8 8 (recommended)	Standard 8 mm 8 *1)
Recording system	Digital8 8	
Playback system	Digital8 8	

118 318 418

Usable cassette tapes	Hi8 Hi8	Standard 8 mm 8
Recording system	Hi8 Hi8 *3)	Standard 8 mm 8
Playback system *2)	Hi8 Hi8	Standard 8 mm 8

*1) If you use standard 8 mm 8 tape, be sure to play back the tape on your camcorder. Mosaic noise may appear when you play back standard 8 mm 8 tape on other VCRs (including another DCR-TRV150/TRV250/TRV350/TRV351).

*2) When you play back a tape, the Hi8 Hi8 system or standard 8 mm 8 system is automatically detected and the playback system automatically switches to.

*3) If you record on a Hi8 Hi8 video cassette in the LP mode, recording is carried out in the standard 8 mm 8 system.

What is the “Digital8 8 system”?

This video system has been developed to enable digital recording to Hi8 Hi8/ Digital8 8 video cassette.

The recording time when you use your Digital8 8 system camcorder on Hi8 Hi8/ standard 8 mm 8 tape is half the recording time when using the conventional Hi8 Hi8/standard 8 mm 8 system camcorder. (120 minutes of recording time becomes 60 minutes in the SP mode.)

What is the “Hi8 Hi8 system”?

This Hi8 Hi8 system is an extension of the standard 8 mm 8 system, and was developed to produce higher quality pictures.

You cannot play back a tape recorded in the Hi8 Hi8 system correctly on video recorders/players other than a Hi8 video recorder/player.

Copyright signal

When you play back

If the tape you play back on your camcorder contains copyright signals, you cannot copy it with another video camera recorder connected to your camcorder.

When you record 150 250 350 351

You cannot record software on your camcorder that contains copyright control signals for copyright protection of software.
The COPY INHIBIT indicator appears on the LCD screen, in the viewfinder or on the TV screen if you try to record such software. Your camcorder does not record copyright control signals on the tape when it records.

When you play back a dual sound track tape 150 250 350 351

When you use a tape recorded in the Digital8 8 system

When you play back a Digital8 8 system tape which is dubbed from a dual sound track tape recorded in the DV system, set HiFi SOUND to the desired mode in the menu settings (p. 214).

Sound from speaker

HiFi Sound Mode	Playing back a stereo tape	Playing back a dual sound track tape
STEREO	Stereo	Main sound and sub sound
1	Lch	Main sound
2	Rch	Sub sound

You cannot record dual sound programs on your camcorder.

When you use a tape recorded in the Hi8 Hi8/standard 8 mm 8 system 350 351

When you play back a dual sound track tape recorded in an AFM HiFi stereo system, set HiFi SOUND to the desired mode in the menu settings (p. 214).

Sound from speaker

HiFi Sound Mode	Playing back a stereo tape	Playing back a dual sound track tape
STEREO	Stereo	Main sound and sub sound
1	Monaural	Main sound
2	Unnatural Sound	Sub sound

You cannot record dual sound programs on your camcorder.

Display during automatic detection of system

The Digital8 8 system or Hi8 Hi8/standard 8 mm 8 system is automatically detected, and the playback system is automatically switched to. During switching of systems, the screen turns blue, and the following displays appear on the screen. A hissing noise also sometimes can be heard.

8 → Hi8/8: During switching from Digital8 8 to Hi8 Hi8/standard 8 mm 8
Hi8/8 → 8: During switching from Hi8 Hi8/standard 8 mm 8 to Digital8 8

About the "Memory Stick"

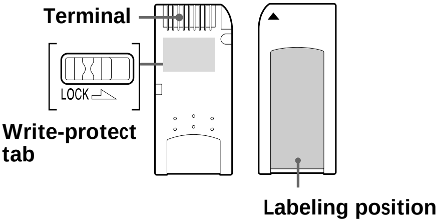
"Memory Stick" is a new compact, portable and versatile IC recording medium with a data capacity that exceeds the capacity of a floppy disk.
In addition to exchanging data between "Memory Stick" compatible equipment, you can also use a "Memory Stick" to store data as a type of detachable external recording media.

There are two types of "Memory Stick": an ordinary "Memory Stick" and a "MagicGate Memory Stick" that is equipped with the MagicGate * copyright protection technology. You can use both types of "Memory Stick" with your camcorder. However, because your camcorder does not support the MagicGate standards, data recorded with your camcorder is not subject to MagicGate copyright protection.

In addition, you can also use "Memory Stick Duo" with your camcorder.

* MagicGate is copyright protection technology that uses encryption technology.

- You cannot record or delete images when the write-protect tab is set to LOCK. The position or the shape of the write-protect tab may differ depending on the "Memory Stick" you use.



- Do not remove the "Memory Stick" or turn off the camcorder while reading or writing data.
- Data may be damaged in a location subject to the effects of static electricity or noise.
- We recommend backing up important data on the hard disk of your computer.
- Do not attach any other material than the supplied label on the labeling position.
- When you carry or store the "Memory Stick," put it in the case supplied with it.
- Do not touch the terminal of a "Memory Stick" with your hand or a metal object.
- Do not strike, bend or drop a "Memory Stick."
- Do not disassemble or modify a "Memory Stick."
- Do not expose the "Memory Stick" to water.
- Do not use or keep the "Memory Stick" under the following conditions:
  - – High temperature locations such as in a car parked in direct sunlight
  - – Locations exposed to direct sunlight
  - – Humid locations or locations with corrosive substances

Notes on using “Memory Stick Duo” (optional)

- When using a “Memory Stick Duo” with your camcorder, be sure to insert the “Memory Stick Duo” into a Memory Stick Duo Adaptor.
- Make sure that a “Memory Stick Duo” is inserted facing the proper direction. Inserting a “Memory Stick Duo” facing the wrong direction may damage the equipment.
- Do not insert a “Memory Stick Duo” without a Memory Stick Duo Adaptor into “Memory Stick” compatible equipment, as this may cause equipment trouble.

About the “InfoLITHIUM” battery pack

What is the “InfoLITHIUM” battery pack?

The “InfoLITHIUM” battery pack is a lithium-ion battery pack that has functions for communicating information related to operating conditions between your camcorder and an AC Adaptor/charger (optional).
The “InfoLITHIUM” battery pack calculates the power consumption according to the operating conditions of your camcorder, and displays the remaining battery time in minutes. Estimated operating time and charging completion time are also displayed.

Charging the battery pack

- Be sure to charge the battery pack before you start using your camcorder.
- We recommend charging the battery pack in an ambient temperature of between 10°C to 30°C (50°F to 86°F) until the charge lamp goes off. If you charge the battery outside of this temperature range, you may not be able to efficiently charge the battery.
- After charging is completed, either disconnect the cable from the DC IN jack on your camcorder or remove the battery pack.

Effective use of the battery pack

- Battery pack performance decreases in low-temperature surroundings. So, the time that the battery pack can be used is shorter in cold places. We recommend the following to ensure longer battery pack use:
  - Put the battery pack in a pocket to warm it up, and insert it in your camcorder immediately before you start taking shots.
  - Use the large-capacity battery pack (NP-FM70/QM71/QM71D/FM90/FM91/QM91/QM91D, optional).
- Frequently using the LCD panel or frequently operating playback, fast-forward or rewind wears out the battery pack faster. We recommend using the large-capacity battery pack (NP-FM70/QM71/QM71D/FM90/FM91/QM91/QM91D, optional).
- Be sure to turn the POWER switch to OFF (CHG) when not taking shots or playing back on your camcorder. The battery pack is also consumed when your camcorder is in the standby mode or playback is paused.
- Have spare battery packs handy for two or three times the expected recording time, and make a trial recordings before taking the actual recording.
- Do not expose the battery pack to water. The battery pack is not water-resistant.

Remaining battery time indicator

- If the power goes off although the remaining battery time indicator indicates that the battery pack has enough power to operate, charge the battery pack fully again so that the indication on the remaining battery time indicator is correct. Note, however, that the correct battery indication sometimes will not be restored if it is used in high temperatures for a long time or left in a fully charged state, or the battery pack is frequently used. Regard the remaining battery time indication as the approximate shooting time.
- The 🪫 mark indicating that there is little remaining battery time sometimes flashes depending on the operating conditions or ambient temperature and environment even if the remaining battery time is about five to 10 minutes.

How to store the battery pack

- If the battery pack is not used for a long time, do the following procedure once per year to maintain proper function.
  1. Fully charge the battery.
  2. Discharge on your electronic equipment.
  3. Remove the battery from the equipment and store it in a dry, cool place.
- To use the battery pack up on your camcorder, leave your camcorder in the standby mode until the power goes off without a cassette inserted.

Battery life

- The battery life is limited. Battery capacity drops little by little as you use it more and more, and as time passes. When the available battery time is shortened considerably, a probable cause is that the battery pack has reached the end of its life. Buy a new battery pack.
- The battery life varies according to how it is stored, operating conditions and environment for each battery pack.

About i.LINK

The DV jack on this unit is an i.LINK-compliant DV jack. This section describes the i.LINK standard and its features.

What is “i.LINK”?

i.LINK is a digital serial interface for handling digital video, digital audio and other data in two directions between equipment having the i.LINK jack, and for controlling other equipment.
i.LINK-compatible equipment can be connected by a single i.LINK cable. Possible applications are operations and data transactions with various digital AV equipment. When two or more i.LINK-compatible equipment are connected to this unit in a daisy chain, operations and data transactions are possible with not only the equipment that this unit is connected to but also with other devices via the directly connected equipment.
Note, however, that the method of operation sometimes varies according to the characteristics and specifications of the equipment to be connected, and that operations and data transactions are sometimes not possible on some connected equipment.

Note

Normally, only one piece of equipment can be connected to this unit by the i.LINK cable. When connecting this unit to i.LINK-compatible equipment having two or more i.LINK jacks (DV jacks), refer to the operating instructions of the equipment to be connected.

About the name “i.LINK”

i.LINK is a more familiar term for IEEE 1394 data transport bus proposed by Sony, and is a trademark approved by many corporations.
IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronic Engineers.

i.LINK baud rate

i.LINK’s maximum baud rate varies according to the equipment. Three maximum baud rates are defined:

S100 (approx. 100 Mbps*)
S200 (approx. 200 Mbps)
S400 (approx. 400 Mbps)

The baud rate is listed under “Specifications” in the operating instructions of each equipment. It is also indicated near the i.LINK jack on some equipment.
The maximum baud rate of equipment on which it is not indicated such as this unit is “S100.”
When units are connected to equipment having a different maximum baud rate, the baud rate sometimes differs from the indicated baud rate.

* What is “Mbps”?
Mbps stands for megabits per second, or the amount of data that can be sent or received in one second. For example, a baud rate of 100 Mbps means that 100 megabits of data can be sent in one second.

About i.LINK

i.LINK functions on this unit

For details on how to dub when this unit is connected to other video equipment having DV jacks, see page 96 and 121.
This unit can also be connected to other i.LINK (DV) compatible non-video equipment made by Sony (e.g. VAIO series computer).
Before connecting this unit to a computer, make sure that application software supported by this unit is already installed on the computer.
For details on precautions when connecting this unit, also refer to the operating instructions of the equipment to be connected.

Required i.LINK cable

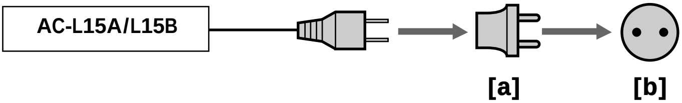
Use the Sony i.LINK 4-pin-to-4-pin cable (during DV dubbing).

Using your camcorder abroad

Using your camcorder abroad

You can use your camcorder in any country or area with the AC Adaptor supplied with your camcorder within 100 V to 240 V AC, 50 / 60 Hz.

When charging the battery pack, use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Your camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV with VIDEO / AUDIO input jack. The following shows TV color systems used overseas.

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system
Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Holland, Hong Kong, Hungary, Italy, Kuwait, Malaysia, New Zealand, Norway, Poland, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, United Kingdom etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

SECAM system
Bulgaria, France, Guiana, Iran, Iraq, Monaco, Russia, Ukraine, etc.

Simple setting of clock by time difference

You can easily set the clock to the local time by setting a time difference. Select WORLD TIME in the menu settings. See page 222 for more information.

Maintenance information and precautions

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this state, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, the beep sounds and the 💧 indicator flashes. When the ⏏ indicator flashes at the same time, the cassette is inserted in your camcorder. If moisture condenses on the lens, the indicator will not appear.

If moisture condensation has occurred

None of the functions except cassette ejection (⌞OPEN/EJECT) work while the alarm indicator is on. Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette compartment open. Your camcorder can be used again if the 💧 indicator does not flash.

Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a hot place as follows:

– You bring your camcorder from a ski slope into a place warmed up by a heating device.
– You bring your camcorder from an air-conditioned car or room into a hot place outside.
– You use your camcorder after a squall or a shower.
– You use your camcorder in a place of high temperature or humidity.

How to prevent moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and tightly seal it. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about one hour).

Maintenance information

Cleaning the video heads

To ensure normal recording and clear pictures, clean the video heads.

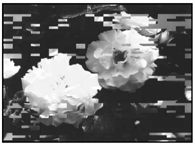
If the below problem **[a]**, **[b]** or **[c]** occurs, clean the video heads for 10 seconds with the Sony V8-25CLD cleaning cassette (optional). Check the picture and if the above problem persists, repeat cleaning.
If the video heads get dirtier, the entire screen becomes blue **[c]**.

150 **250** **350** **351**

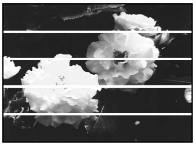
When you playback/record in the Digital8 Ð system

The video heads may be dirty when:
– Mosaic-pattern noise appears on the playback picture.
– Playback pictures do not move.
– Playback pictures are hardly visible.
– Playback pictures do not appear.
– The ⊗ indicator and "📼 CLEANING CASSETTE" message appear one after another.

[a]



[b]



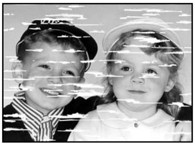
[c]

118 **318** **418** **350** **351**

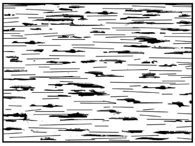
When you play back in the Hi8 Hi8/Standard 8 mm 8 system

The video heads may be dirty when:
– The ⊗ indicator and "📼 CLEANING CASSETTE" message appear one after another on the screen or the ⊗ indicator flashes on the screen.
– Playback pictures contain noise.
– Playback pictures are hardly visible.
– Playback pictures do not appear.

[a]



[b]



[c]

Cleaning the LCD screen

If fingerprints or dust makes the LCD screen dirty, we recommend using the LCD Cleaning Kit (optional) to clean the LCD screen.

Notes

- Store your camcorder with **the cassette removed** from it when you do not use it for an extended period of time.
- Clean the heads with an optional head cleaner (cleaning cassette) before important recording or when playback image or sound is distorted.
- When the playback pictures still contain noise even if you have cleaned the video heads with a cleaning cassette, the video heads may have worn down due to long use. If this is the case, they must be replaced with new heads. Contact your Sony dealer or local authorized Sony service facility.

Charging the built-in rechargeable battery

Your camcorder is supplied with a built-in rechargeable battery installed to retain the date and time, etc., regardless of the setting of the POWER switch. The built-in rechargeable battery is always charged as long as you are using your camcorder. The battery, however, will become discharged gradually if you do not use your camcorder. It will be completely discharged in **about three months** if you do not use your camcorder at all. Even if the built-in rechargeable battery is not charged, it will not affect camcorder operation. To retain the date, time, and other information, charge the battery if the battery is discharged.

Charging the built-in rechargeable battery:

– Connect your camcorder to wall outlet using the AC Adaptor supplied with your camcorder, and leave your camcorder with the POWER switch turned off for more than 24 hours.

– Or, install a fully charged battery pack in your camcorder, and leave your camcorder with the POWER switch set to OFF (CHG) for more than 24 hours.

Precautions

Camcorder operation

- Operate your camcorder on 7.2 V (battery pack) or 8.4 V (AC Adaptor).
- For DC or AC operation, use the accessories recommended in these operating instructions.
- If any solid object or liquid gets inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF (CHG) when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- Keep your camcorder away from strong magnetic fields or mechanical vibration.
- Do not touch the LCD screen with your fingers or a sharp-pointed object.
- If your camcorder is used in a cold place, a residual image may appear on the screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

Built-in light

- Do not knock or jolt the built-in light while it is turned on as it may damage the bulb or shorten the life of the bulb.
- Do not leave the built-in light on while it is resting on or against something; it may cause a fire or damage the built-in light.

On handling tapes

- Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type and thickness of the tape and if the recording tab is in or out.
- Do not open the tape protect cover or touch the tape.
- Avoid touching or damaging the terminals. To remove dust, clean the terminals with a soft cloth.

Camcorder care

- Remove the tape, and periodically turn on the power, operate the CAMERA and VCR/PLAYER sections and play back a tape for a certain period *1) when your camcorder is not to be used for a long time.*2)
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into your camcorder. When you use your camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause your camcorder to malfunction, and sometimes this malfunction cannot be repaired.

Connection to your computer 350 351

When inputting the image recorded by Hi8 Hi8/standard 8 mm 8 system into Sony VAIO

The Program Capture function of DVgate motion does not work. To use this function, dub the image into a Digital8 Ð or DV tape first, and then input it into your Sony VAIO.

Connection to your computer 150 250 350 351

When recording an image processed or edited by your computer with the i.LINK cable, use a new Hi8 Hi8/Digital8 Ð tape.

*1) three minutes: 150 250 350 351
five minutes: 118 318 418
*2) Modes on the POWER switch vary depending on models (p. 16).

AC Adaptor

- Unplug the unit from the wall outlet when you are not using it for a long time. To disconnect the power cord, pull it out by the plug. Never pull the power cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord forcibly, or place a heavy object on it. This will damage the cord and may cause fire or electric shock.
- Prevent metallic objects from coming into contact with the metal parts of the connecting section. If this happens, a short may occur and the unit may be damaged.
- Always keep metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment. AM receivers and video equipment disturb AM reception and video operation.
- The unit becomes warm during use. This is not a malfunction.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

About care and storage of the lens

- Wipe the surface of the lens clean with a soft cloth in the following instances:
  - When there are fingerprints on the lens surface
  - In hot or humid locations
  - When the lens is used in environments susceptible to salt such as the seaside
- Store the lens in a well-ventilated location subject to little dirt or dust.

To prevent mold from occurring, periodically perform the above.
We recommend turning on and operating your camcorder about once per month to keep your camcorder in an optimum state for a long time.

Rechargeable Battery Pack

- Use only the specified charger or video equipment with the charging function.
- To prevent accidental short circuit, do not allow metal objects to come into contact with the rechargeable battery terminals.
- Keep the Rechargeable Battery Pack away from fire.
- Never expose the Rechargeable Battery Pack to temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight.
- Keep the Rechargeable Battery Pack in a cool, dry place.
- Do not expose the Rechargeable Battery Pack to any mechanical shock.
- Do not disassemble or modify the Rechargeable Battery Pack.
- Attach the Rechargeable Battery Pack to the video equipment securely.
- Charging while some capacity remains does not affect the original battery capacity.

Notes on dry batteries 418 250 350 351

To avoid possible damage from battery leakage or corrosion, observe the following:

– Be sure to insert the batteries with the + and – correctly matching the + and – inside the battery compartment.
– Dry batteries are not rechargeable.
– Do not use a combination of new and old batteries.
– Do not use different types of batteries.
– Current flows from batteries when you are not using them for a long time.
– Do not use leaking batteries.

If batteries are leaking

- Wipe off the liquid in the battery compartment carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid gets into your eyes, wash your eyes with a lot of water and then consult a doctor.

If any problem occurs, unplug your camcorder and contact your nearest Sony dealer.

Specifications

Video camera recorder

		118 318 418	150	250	350 351
System	**Video recording system**	2 rotary heads Helical scanning FM system	2 rotary heads Helical scanning system		
	Audio recording system	Rotary heads, FM system	Rotary heads, PCM system Quantization: 12bits (Fs 32 kHz, stereo 1, stereo 2), 16bits (Fs 48 kHz, stereo)		
	Video signal	NTSC color, EIA standards			
	Usable cassette	8 mm video format cassette			
	Recording/ playback time (using 120 min. Hi8/Digital8 video cassette)	SP mode: 2 hours LP mode: 4 hours	SP mode: 1 hour LP mode: 1 hour and 30 minutes		
	Fastforward/ rewind time (using 120 min. Hi8/Digital8 video cassette)	Approx. 5 min.			
	Viewfinder	Electric Viewfinder (monochrome)			
	Image device	3 mm (1/6 type) CCD (Charge Coupled Device) Gross: Approx. 320 000 pixels Effective: Approx. 200 000 pixels	3 mm (1/6 type) CCD (Charge Coupled Device) Gross: Approx. 460 000 pixels Effective: Approx. 290 000 pixels		
	Lens	Combined power zoom lens Filter diameter 37 mm (1 7/16 in.)			
		20× (Optical), 560× (Digital)		20× (Optical), 700× (Digital)	
	Focal length	f = 2.5 - 50 mm (1/8 - 2 in.) When converted to a 35 mm still camera f = 42 - 840 mm (1 11/16 - 33 1/8 in.)			
	Color temperature	Auto			
	Minimum illumination	1 lx (lux) (F 1.6)	4 lx (lux) (F 1.6)		
		0 lx (lux) (in the NightShot mode)* * Objects unable to be seen due to the dark can be shot with infrared lighting.			

(continued on the following page)

Specifications

		118 318 418	150	250	350 351
Input/ output connectors	**S video jack**	Output			Input/Output
		Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced Chrominance signal: 0.286 Vp-p, 75 Ω (ohms), unbalanced 4-pin mini DIN			Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced Chrominance signal: 0.286 Vp-p, 75 Ω (ohms), unbalanced 4-pin mini DIN
	Audio/Video jack	Output			Input/Output
		AV MINIJACK, VIDEO: 1 Vp-p, 75 Ω (ohms), unbalanced, sync negative AUDIO: 327 mV, (at output impedance more than 47 kΩ (kilohms)) Input impedance with more than 47 kΩ (kilohms) Output impedance with less than 2.2 kΩ (kilohms)			AV MINIJACK, VIDEO: 1 Vp-p, 75 Ω (ohms), unbalanced, sync negative AUDIO: 327 mV, (at output impedance more than 47 kΩ (kilohms)) Input impedance with more than 47 kΩ (kilohms) Output impedance with less than 2.2 kΩ (kilohms) Stereo minijack (ø 3.5 mm)
		Monaural minijack (ø 3.5 mm)	Stereo minijack (ø 3.5 mm)		
	RFU DC OUT	Mini-minijack (ø 2.5 mm), DC5V	—		
	MIC jack	—			Stereo minijack (ø 3.5 mm)
	DV jack	—	4-pin connector		
	USB jack	—		mini-B	
	LANC jack	—			Stereo minijack (ø 2.5 mm)
LCD screen	**Picture**	6.2 cm (2.5 type), 50.3 × 37.4 mm (2 × 1 1/2 in.)			
	Total dot number	61 600 (280 × 220)	123 200 (560 × 220)		
General	**Power requirements**	7.2 V (Rechargeable Battery Pack) 8.4 V (AC Adaptor)			
	Average power consumption (when using the battery pack)	During camera recording using LCD 2.6 W During camera recording using viewfinder 1.9 W	During camera recording using LCD 3.5 W During camera recording using viewfinder 2.7 W		During camera recording using LCD 3.8 W During camera recording using viewfinder 2.9 W
	Operating temperature	0°C to 40°C (32°F to 104°F)			
	Recommended charging temperature	10°C to 30°C (50°F to 86°F)			
	Storage temperature	–20°C to +60°C (–4°F to +140°F)			
	Dimensions (approx.)	89 × 101 × 199 mm (3 5/8 × 4 × 7 7/8 in.) (w/h/d)			
	Mass (approx.)	800 g (1 lb 12 oz) (main unit only)	810 g (1 lb 12 oz) (main unit only)		830 g (1 lb 13 oz) (main unit only)
		940 g (2 lb 1 oz) (including the Rechargeable Battery Pack NP-FM30, Hi8/Digital8 cassette, lens cap, and shoulder strap)	950 g (2 lb 1 oz) (including the Rechargeable Battery Pack NP-FM30, Hi8/Digital8 cassette, lens cap, and shoulder strap)		970 g (2 lb 2 oz) (including the Rechargeable Battery Pack NP-FM30, Hi8/Digital8 cassette, lens cap, and shoulder strap)
	Supplied accessories	See page 9.			

Specifications

AC Adaptor AC-L15A/L15B

Power requirements	100 - 240 V AC, 50/60 Hz
Current consumption	0.35 - 0.18 A
Power consumption	18 W
Output voltage	DC OUT: 8.4 V, 1.5 A in the operating mode
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Dimensions (approx.)	56 × 31 × 100 mm (2 1/4 × 1 1/4 × 4 in.) (w/h/d) excluding projecting parts
Mass (approx.)	190 g (6.7 oz) excluding power cord

Rechargeable Battery Pack NP-FM30

Maximum output voltage	DC 8.4 V
Output voltage	DC 7.2 V
Capacity	5.0 Wh (700 mAh)
Operating temperature	0°C to 40°C (32°F to 104°F)
Dimensions (approx.)	38.2 × 20.5 × 55.6 mm (1 9/16 × 13/16 × 2 1/4 in.) (w/h/d)
Mass (approx.)	65 g (2.3 oz)
Type	Lithium ion

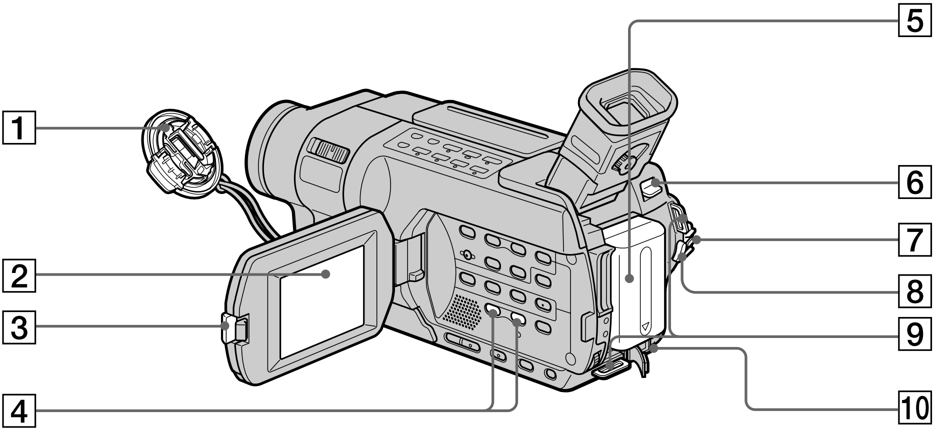
“Memory Stick” 351

Memory	Flash memory 8MB: MSA-8A
Operating voltage	2.7 - 3.6 V
Power consumption	Approx. 45 mA during operation Approx. 130 µA in the standby mode
Dimensions (approx.)	50 × 2.8 × 21.5 mm (2 × 1/8 × 7/8 in.) (w/h/d)
Mass (approx.)	4 g (0.14 oz)

Design and specifications are subject to change without notice.

Identifying parts and controls

Camcorder



1 **Lens cap** (p. 30)

2 **LCD screen** (p. 30)

3 **OPEN button** (p. 30)

4 **VOLUME –/+ * button** (p. 45)

5 **Rechargeable Battery Pack** (p. 18)

6 **BATT (battery) release lever** (p. 18)

7 **POWER switch** (p. 30)

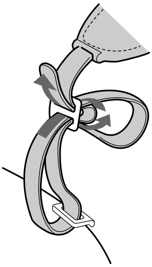
8 **START/STOP button** (p. 30)

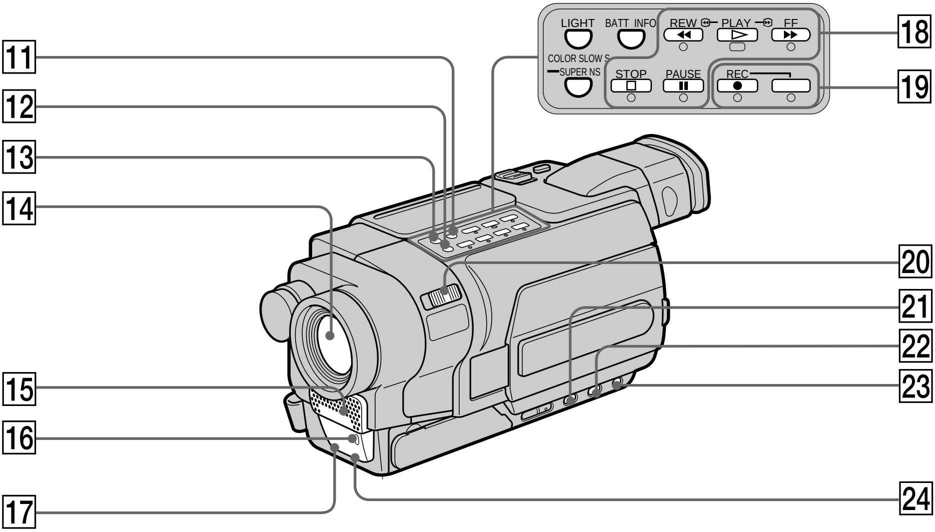
9 **Hooks for shoulder strap**

10 **DC IN jack** (p. 19)

* This button has a tactile dot.

Attaching the shoulder strap
Attach the shoulder strap supplied with your camcorder to the hooks for the shoulder strap.




LIGHT
BATT INFO
REW
PLAY
FF
COLOR SLOW S
SUPER NS
STOP
PAUSE
REC
11
12
13
14
15
16
17
18
19
20
21
22
23
24

11 **BATT INFO** (p. 20)

12 **SUPER NS/COLOR SLOW S button** *1) (p. 39)

13 **LIGHT button** (p. 79)

14 **Lens**

15 **Microphone**

16 **Camera recording lamp** (p. 30)

17 **Infrared rays emitter** (p. 39)

18 **Video control buttons** *2) (p. 45, 49)
■ STOP (stop)
◀◀ REW (rewind)
▶ PLAY (playback)
▶▶ FF (fast-forward)
❚❚ PAUSE (pause)

19 **Rec buttons** *2) *3)
● REC (recording)

20 **NIGHTSHOT switch** (p. 39)

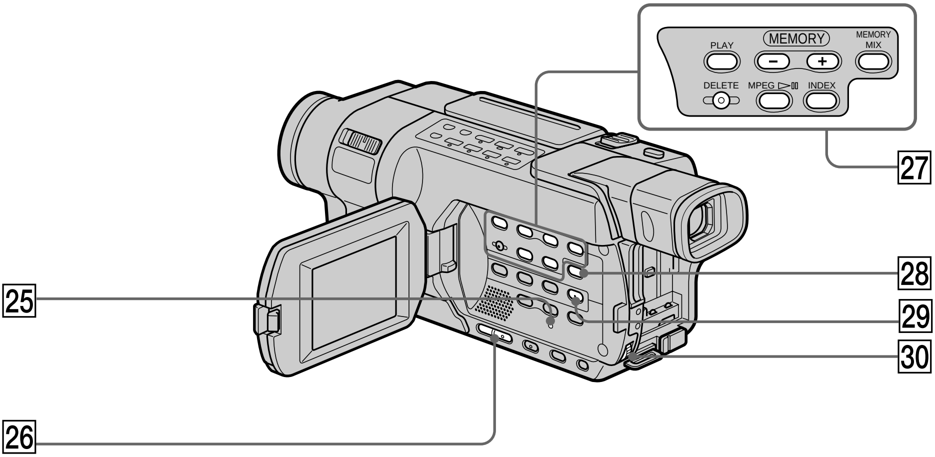
21 **FADER button** *2) (p. 61)

22 **BACK LIGHT button** (p. 38)

23 **FOCUS button** (p. 71)

24 **Remote sensor** *4)

*1) 350 351
*2) This button has a tactile dot.
*3) 150 250 350 351
*4) 418 250 350 351


PLAY
MEMORY
MEMORY MIX
–
+
DELETE
MPEG ▷II
INDEX
25
26
27
28
29
30

25 **RESET button** (p. 230)

26 **EDITSEARCH button** *1) *2) (p. 43)

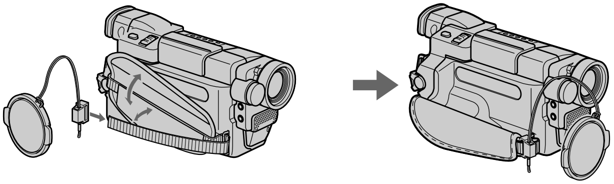
27 **MEMORY operation buttons** *2)
MEMORY PLAY button (p. 163)
MEMORY – button (p. 163)
MEMORY + button (p. 163)
MEMORY MIX button (p. 141)
MEMORY DELETE button (p. 177)
MPEG ►II button (p. 166)
MEMORY INDEX button (p. 165)

28 **DISPLAY button** (p. 47)

29 **MENU button** *1) (p. 210)

30 **SEL/PUSH EXEC dial** (p. 210)

Attaching the lens cap
Attach the lens cap to the grip strap as illustrated.



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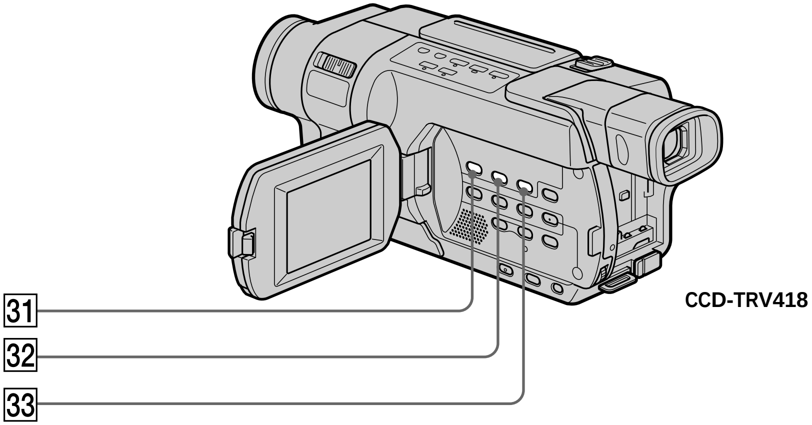
*1) This button has a tactile dot.
*2) 350 351

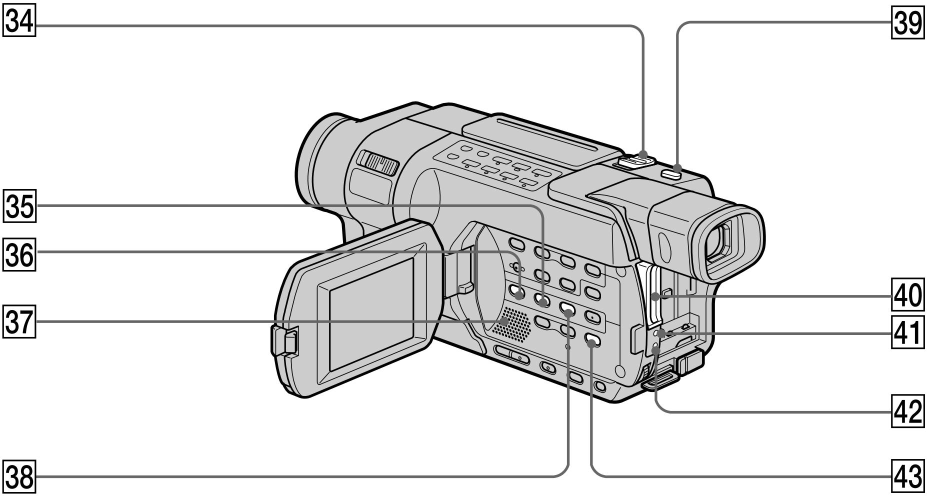

31
32
33
CCD-TRV418

31 **DATE button** * (p. 42)

32 **TIME button** * (p. 42)

33 **COUNTER RESET button** * (p. 31)

* 118 318 418



34 **Power zoom lever** (p. 34)

35 **EXPOSURE button** (p. 70)

36 **PB ZOOM button** *1) (p. 87, 172)
EASY DUB button *2) (p. 98)

37 **Speaker**

38 **TITLE button** (p. 75)

39 **PHOTO button** *3) (p. 53, 56, 132)

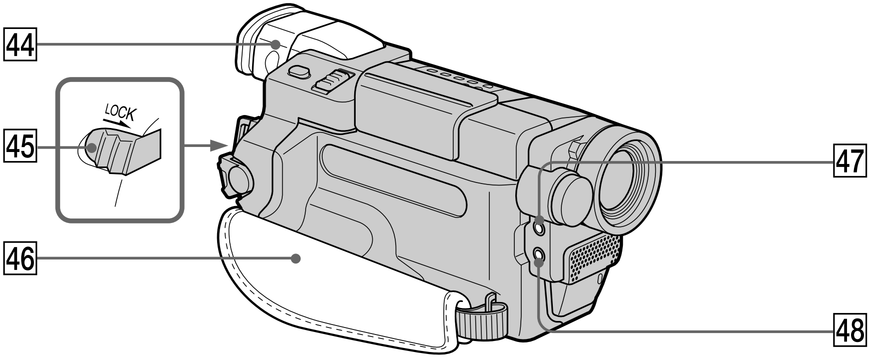
40 **“Memory Stick” slot** *1) (p. 127)

41 ▭ **Access lamp** *1) (p. 127)

42 **CHG lamp** (p. 19)

43 **END SEARCH button** (p. 43, 49)

*1) 350 351
*2) 118 318 418
*3) 150 250 350 351



44 **Viewfinder** (p. 35)

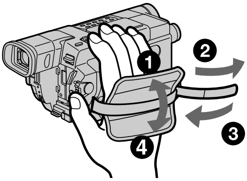
45 **LOCK switch** * (p. 30)

46 **Grip strap**

47 **MIC (PLUG IN POWER) jack (red)** *
Connect an external microphone (optional). This jack also accepts a "plug-in-power" microphone.

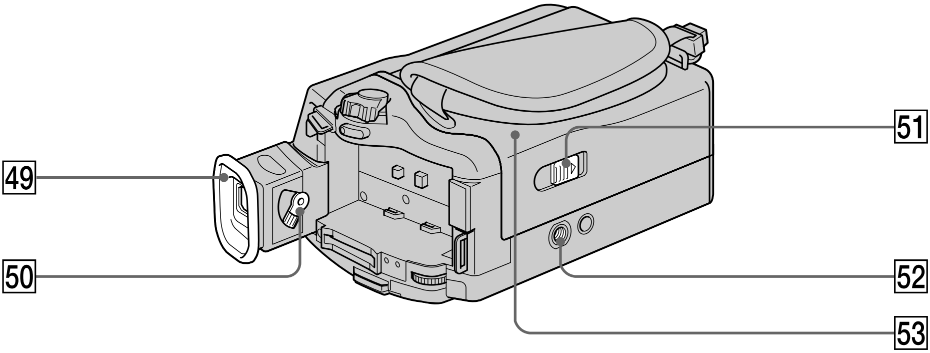
48 **LANC jack (blue)** *
LANC stands for Local Application Control Bus System. The LANC control jack is used for controlling the tape transport of video equipment and other peripherals connected to the video equipment. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

Fastening the grip strap



Fasten the grip strap firmly.

* 350 351



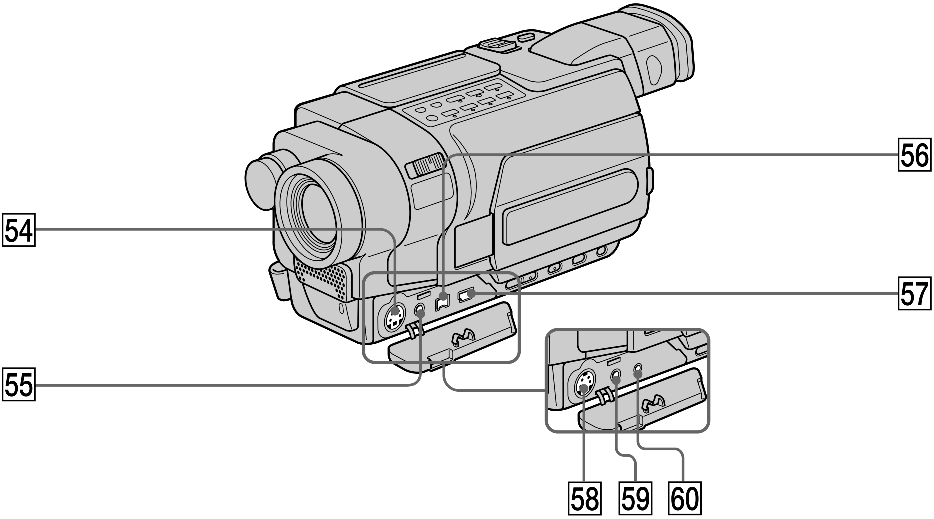
49 **Eyecup**

50 **Viewfinder lens adjustment lever** (p. 35)

51 **OPEN/EJECT switch** (p. 28)

52 **Tripod receptacle** (base)
Make sure that the length of the tripod screw is less than 5.5 mm (7/32 in.). Otherwise, you cannot attach the tripod securely and the screw may damage your camcorder.

53 **Cassette compartment** (p. 28)



54 **S VIDEO or S VIDEO OUT jack** *1)
(p. 51, 94, 119, 138, 152, 208)

55 **AUDIO/VIDEO or A/V OUT jack** *1)
(p. 51, 94, 119, 138, 152, 208)

56 **i DV jack** *1)
(p. 96, 121, 139, 153, 184, 208)
The DV jack is i.LINK compatible.

57 **ψ (USB) jack** *2) (p. 183, 185)

58 **S VIDEO OUT** *3) (p. 51, 95)

59 **A/V OUT** *3) (p. 51, 95)

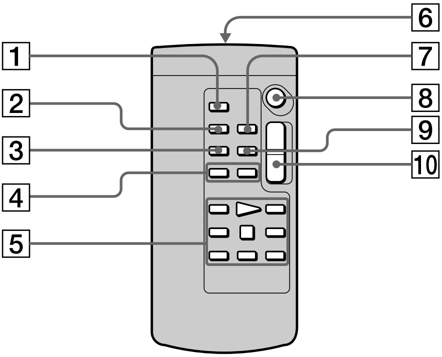
60 **RFU DC OUT** *3) (p. 52)

*1) 150 250 350 351
*2) 250 350 351
*3) 118 318 418

Remote Commander

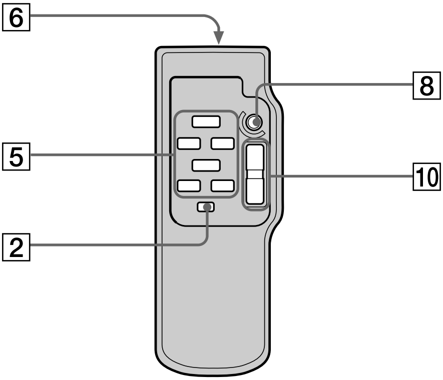
The buttons that share the same name on the Remote Commander and your camcorder function identically.

250 350 351



RMT-814

418



RMT-708

1 **PHOTO button** (p. 53, 56, 132)

2 **DISPLAY button** (p. 47)

3 **SEARCH MODE button** (p. 90, 92)

4 **⏮/⏭ buttons** (p. 90, 92)

5 **Video control buttons** (p. 45, 49)

6 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.

7 **ZERO SET MEMORY button** (p. 89, 124)

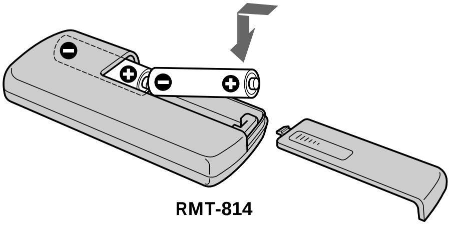
8 **START/STOP button** (p. 30)

9 **DATA CODE button** (p. 47)

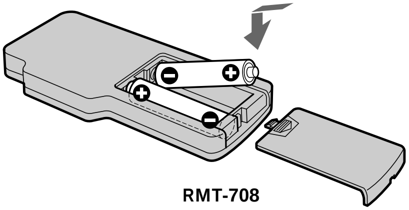
10 **Power zoom button** (p. 34)

To prepare the Remote Commander

Insert 2 size AA (R6) batteries by matching the + and – polarities on the batteries to the + – marks inside the battery compartment.



RMT-814



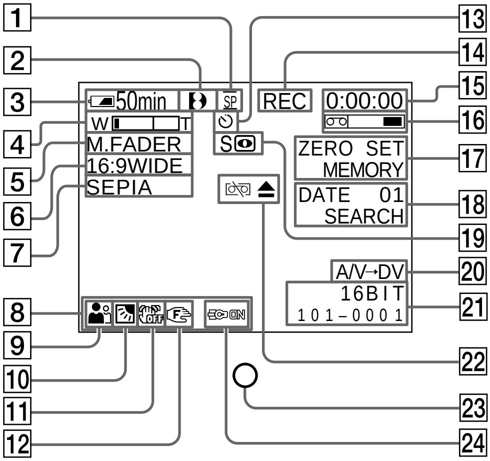
RMT-708

Notes on the Remote Commander

- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- Your camcorder works in the commander mode VTR 2. The commander modes 1, 2 and 3 are used to distinguish your camcorder from other Sony VCRs to avoid unintentional operations. If you use another Sony VCR in the commander mode VTR 2, we recommend changing the commander mode or covering the sensor of the VCR with black paper.

Operation indicators

LCD screen and Viewfinder


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
50min
SP
REC
0:00:00
W T
M.FADER
16:9WIDE
SEPIA
ZERO SET MEMORY
DATE 01 SEARCH
A/V→DV
16BIT
101–0001
OFF
ON

1 **Recording mode** (p. 36)

Mirror mode 118 318 418 (p. 35)

2 **Format** (p. 36)
D, Hi8 or 8 indicator appears.

3 **Remaining battery time** (p. 36)

4 **Zoom** (p. 34)

Exposure (p. 70)

5 **Fader** (p. 61)

Digital effect 350 351 (p. 65, 85)

MEMORY MIX 350 351 (p. 140)

6 **Wide mode** (p. 58)

FRAME indicator 350 351 (p. 132)

7 **Picture effect** (p. 64, 83)

8 **Volume** (p. 45)

Data code 250 350 351 (p. 47)

9 **PROGRAM AE** (p. 68)

10 **Backlight** (p. 38)

11 **SteadyShot off** 318 418 150 250 350 351 (p. 213)

12 **Manual focusing** (p. 71)

13 **Self-timer indicator** 350 351 (p. 41, 55, 135, 149)

14 **STBY/REC** (p. 30)

Video control mode (p. 49)

Image size 350 351 (p. 130)

Image quality 350 351 (p. 128)

15 **Tape counter** (p. 36)

Time code 150 250 350 351 (p. 36)

Self-diagnosis display (p. 232)

Tape Photo recording 150 250 (p. 56)

Memory Photo recording 350 351 (p. 132)

Image number 350 351 (p. 164)

16 **Remaining tape** (p. 36)

17 **ZERO SET MEMORY** 250 350 351 (p. 89, 124)

FRAME REC indicator 150 250 350 351 (p. 74)

INTERVAL TAPE indicator 150 250 350 351 (p. 73)

INTERVAL MEM STILL indicator 350 351 (p. 154)

18 **END SEARCH** (p. 43, 49)

DATE SEARCH 250 350 351 (p. 90)

PHOTO SEARCH/PHOTO SCAN 250 (p. 92)

19 **NIGHTSHOT** (p. 39)

SUPER NIGHTSHOT 350 351 (p. 39)

COLOR SLOW SHUTTER 350 351 (p. 40)

20 **A/V → DV** 350 351 (p. 208)

DV IN 150 250 350 351 (p. 122)

Current folder 350 351 (p. 132)

21 **Audio mode** 150 250 350 351 (p. 219)

Data file name *1) 350 351 (p. 164, 168)

Time (p. 36)

Auto date 118 318 418 (p. 221)

22 **Warning** (p. 233)

23 **Camera recording lamp** (p. 30)
This indicator appears in the viewfinder.

24 **Built-in light** (p. 79)

Video flash mode *2) 350 351 (p. 211)

Flash *2) 350 351

*1) This indicator appears when MEMORY MIX works.
*2) This indicator appears when you use the video flash light (optional).

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3 0 7 9 4 6 7 1 3

DCR-TRV250

RMT-814

SERVICE MANUAL

LEVEL 2

Ver 1.2 2003. 03
Revision History

US Model
Canadian Model
E Model
Brazilian Model
Tourist Model

NIGHTSHOT
OFF ON
700x
DIGITAL ZOOM
OPTICAL 20x
SONY
Digital Handycam
USB STREAMING
SteadyShot
DCR-TRV250E PAL
Digital 8

M2200 MECHANISM

Link

SPECIFICATIONS	BLOCK DIAGRAMS	PRINTED WIRING BOARDS
SERVICE NOTE	FRAME SCHEMATIC DIAGRAMS	REPAIR PARTS LIST
DISASSEMBLY	SCHEMATIC DIAGRAMS	

- For ADJUSTMENTS (SECTION 6), refer to SERVICE MANUAL, ADJ (987624151.pdf).
- For INSTRUCTION MANUAL, refer to SERVICE MANUAL, LEVEL1 (987624141.pdf).
- For MECHANISM ADJUSTMENTS, refer to the “8mm Video MECHANICAL ADJUSTMENT MANUAL IX M2000 MECHANISM ” (9-929-861-11).
- Reference No. search on printed wiring boards is available.
- When the machine needs to be repaired, make sure to follow the items of “CCD TYPE CHECK” and “LCD TYPE CHECK”.
- HELP: Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

On the VC-305 board

This service manual provides the information that is premised the circuit board replacement service and not intended repair inside the VC-305 board.

Therefore, schematic diagram, printed wiring board, waveforms, mounted parts location and electrical parts list of the VC-305 board are not shown.

The following pages are not shown.

Schematic diagram	Pages 4-9 to 4-48	Mounted parts location	Page 4-88, 4-89
Printed wiring board	Pages 4-67 to 4-70	Electrical parts list	Pages 5-18 to 5-25
Waveforms	Page 4-82 to 4-85		

Digital 8 DIGITAL VIDEO CAMERA RECORDER

SONY®

SPECIFICATIONS

Video camera recorder

System

Video recording system
2 rotary heads
Helical scanning system

Audio recording system
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)

Video signal
NTSC color, EIA standards

Usable cassette
8 mm video format cassette

Recording/playback time (using 120 min. Hi8/Digital8 video cassette)
SP mode: 1 hour
LP mode: 1 hour and 30 minutes

Fastforward/rewind time (using 120 min. Hi8/Digital8 video cassette)
Approx. 5 min.

Viewfinder
Electric Viewfinder (monochrome)

Image device
3 mm (1/6 type) CCD
(Charge Coupled Device)
Gross: Approx. 460 000 pixels
Effective: Approx. 290 000 pixels

Lens
Combined power zoom lens
Filter diameter 37 mm (1 7/16 in.)
20× (Optical), 700× (Digital)

Focal length
f=2.5 – 50 mm (1/8 - 2 in.)
When converted to a 35 mm still camera
f=42 – 840 mm (1 11/16 - 33 1/8 in.)

Colour temperature
Auto

Minimum illumination
4 lx (lux) (F 1.6)
0 lx (lux) (in the NightShot mode)*
* Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/output connectors

S video jack
Output
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Chrominance signal: 0.286 Vp-p, 75 Ω (ohms), unbalanced

Audio/Video jack
Output
AV MINIJACK,
VIDEO:
1 Vp-p, 75 Ω (ohms), unbalanced, sync negative
AUDIO:
327 mV, (at output impedance more than 47 kΩ (kilohms))
Output impedance with less than 2.2 kΩ (kilohms)
Stereo minijack (ø 3.5 mm)

DV jack
Input/Output
4-pin connector

USB jack
Mini-B

LCD screen

Picture
6.2 cm (2.5 type)
50.3 × 37.4 mm
(2 × 1 1/2 in.)

Total dot number
123 200 (560 × 220)

General

Power requirements
7.2 V (Recahrgeable battery pack)
8.4 V (AC adaptor)

Average power consumption (when using the battery pack)
During camera recording using LCD
3.5 W
Viewfinder
2.7 W

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Recommended charging temperature
10 °C to 30 °C (50 °F to 86 °F)

Storage temperature
–20 °C to +60 °C (–4 °F to +140 °F)

Dimensions (approx.)
89 × 101 × 199 mm
(3 5/8 × 4 × 7 7/8 in.) (w/h/d)

Mass (approx.)
810 g (1 lb 12 oz)
main unit only
950 g (2 lb 1 oz)
including the rechargeable battery pack NP-FM30, Hi8/Digital8 cassette, lens cap and shoulder strap

AC adaptor

Power requirements
100 - 240 V AC, 50/60 Hz

Current consumption
0.35 – 0.18 A

Power consumption
18 W

Output voltage
DC OUT: 8.4 V, 1.5 A in the operating mode

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Storage temperature
–20 °C to +60 °C (–4 °F to +140 °F)

Dimensions (approx.)
56 × 31 × 100 mm
(2 1/4 × 1 1/4 × 4 in.) (w/h/d)
excluding projecting parts

Mass (approx.)
190 g (6.7 oz)
excluding power cord

Recargeable battery pack

Maximum output voltage
DC 8.4 V

Output voltage
DC 7.2 V

Capacity
5.0 Wh (700 mAh)

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Dimensions (approx.)
38.2 × 20.5 × 55.6 mm
(1 9/16 × 13/16 × 2 1/4 in.)
(w/h/d)

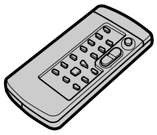
Mass (approx.)
65 g (2.3 oz)

Type
Lithium ion

Design and specifications are subject to change without notice.

Supplied accessories

1



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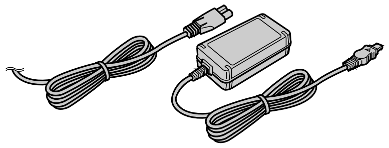

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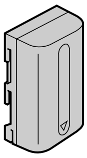

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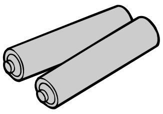

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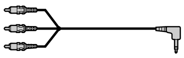

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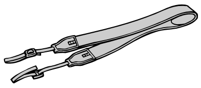

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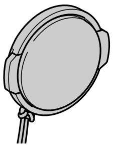

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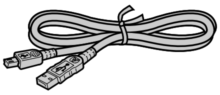

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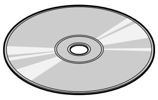

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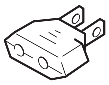

1 **Wireless Remote Commander** (1)

2 **AC-L15A/L15B AC Adaptor** (1), **Power cord** (1)

3 **NP-FM30 Rechargeable Battery Pack** (1)

4 **Size AA (R6) battery for Remote Commander** (2)

5 **A/V connecting cable** (1)

6 **Shoulder strap** (1)

7 **Lens cap** (1)

8 **USB cable** (1)

9 **CD-ROM (SPVD-010 USB Driver)** (1)

10 **2-pin conversion adaptor** (1) (E, JE)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

LF : LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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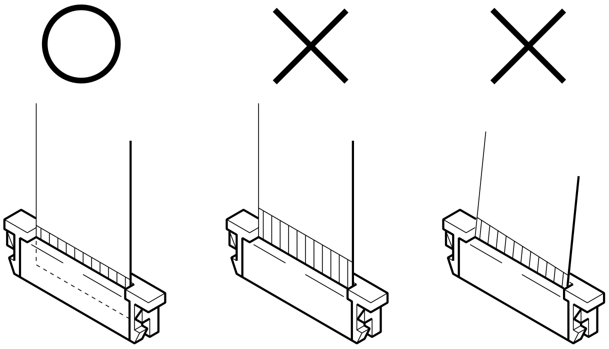
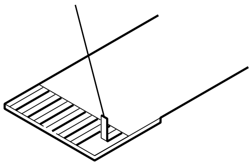
SECTION 1
SERVICE NOTE

1-1. NOTE FOR REPAIR

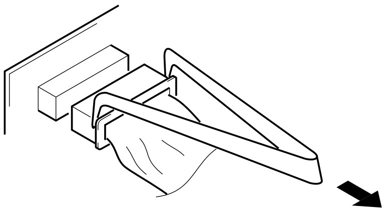
Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



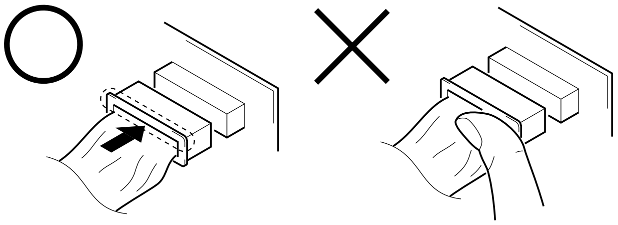
Cut and remove the part of gilt which comes off at the point. (Be careful or some pieces of gilt may be left inside)



When remove a connector, don't pull at wire of connector.
It is possible that a wire is snapped.



When installing a connector, don't press down at wire of connector.
It is possible that a wire is snapped.



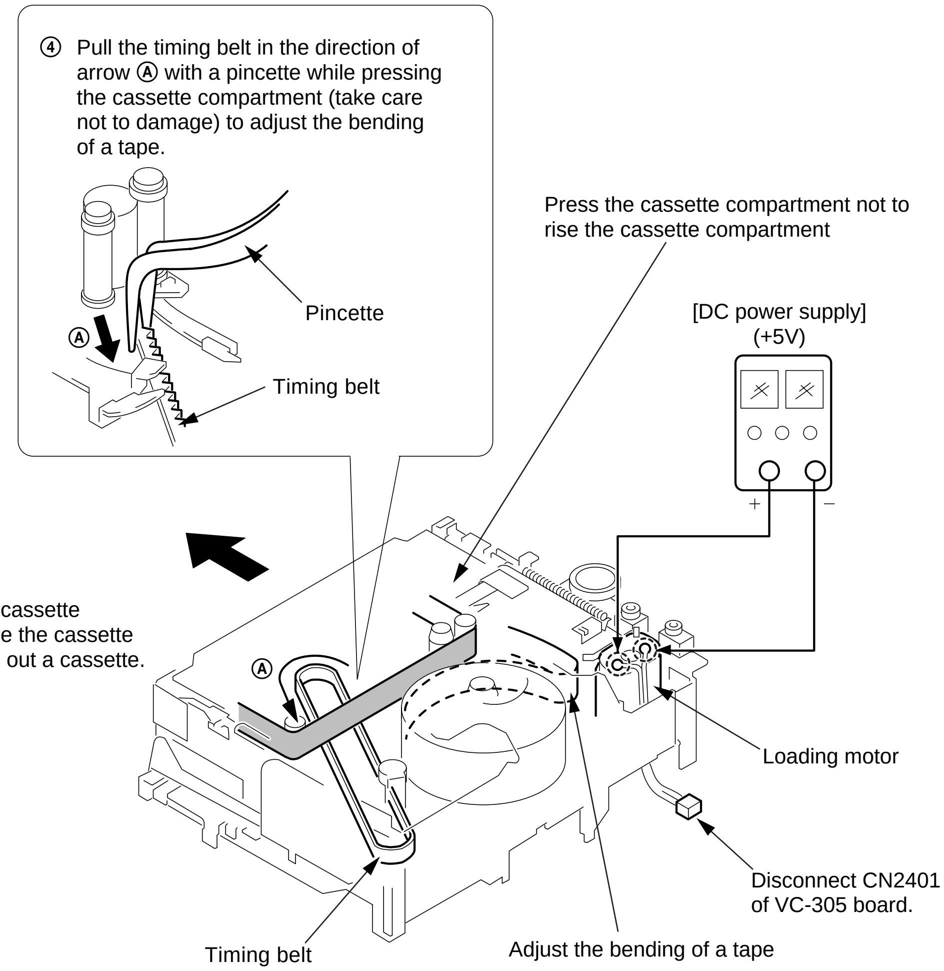
1-2. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied to the battery terminal using the regulated power supply (8.4V), the power is shut off so that the unit cannot operate.
The following method is available to prevent this.

Method 1.
Use the AC power adaptor (AC-L10, AC-VQ800 etc.).

1-3. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to “SECTION 2 DISASSEMBLY” to remove the mechanism deck block.
② Disconnect CN2401 (2P) of VC-305 board.
③ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette compartment.



④ Pull the timing belt in the direction of arrow Ⓐ with a pincette while pressing the cassette compartment (take care not to damage) to adjust the bending of a tape.

⑤ Let go your hold the cassette compartment and rise the cassette compartment to take out a cassette.

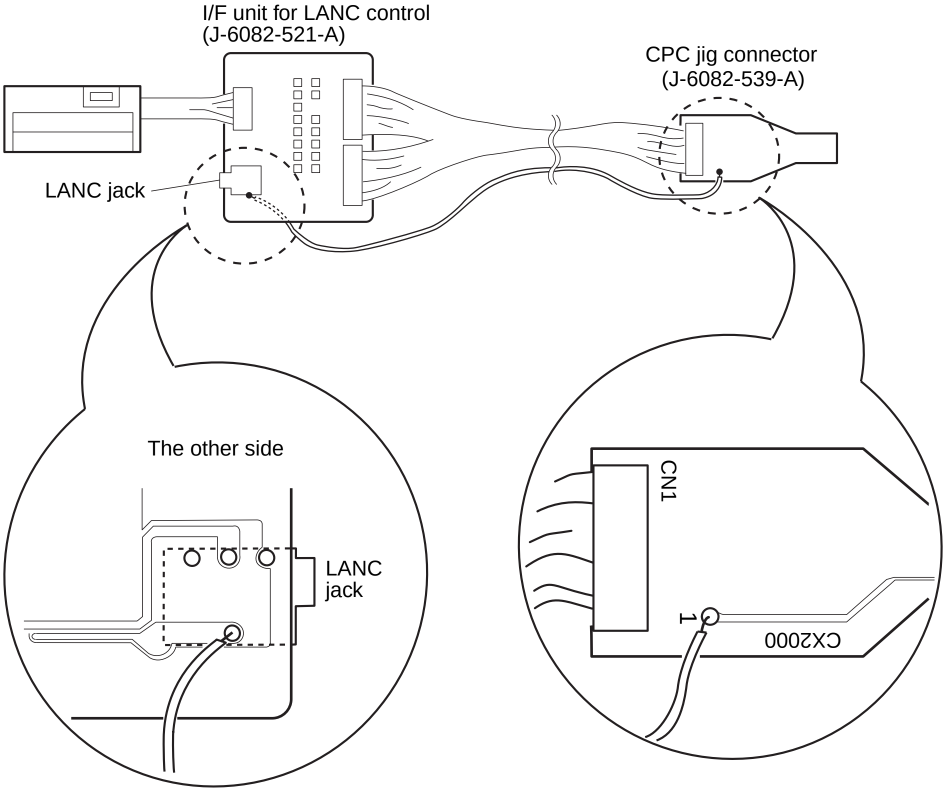
Press the cassette compartment not to rise the cassette compartment

Disconnect CN2401 of VC-305 board.

Adjust the bending of a tape

1-4. JIG MODIFICATION

Connect the LANC SIG pin of the I/F unit for LANC control to the land of pin 1 of the CPC jig connector with a jumper wire.
This modification is required in the DCR-TRV250 only. Be sure to disconnect the jumper wire when using the I/F unit for LANC control or CPC jig connector on other models.


I/F unit for LANC control
(J-6082-521-A)
CPC jig connector
(J-6082-539-A)
LANC jack
The other side
LANC
jack
CN1
1
CX2000

1-5. CCD TYPE CHECK

Note: About VC-304/VC-305 board and CCD imager, discriminate CCD type on the machine, and replace same type.

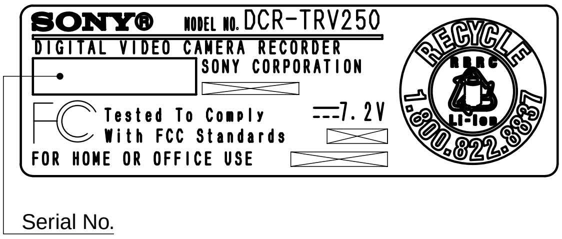
1-5-1. Checking Method by Serial No.

Type of CCD imager can be identified with its serial No.. Check the serial No. printed on the MODEL NUMBER LABEL.

Serial No.	CCD type	VC board
310001 to 310300, 320071 to 341220, 341521 to 341720, 342421 to 342720, 820001 to 821100, 850001 to 854200, 860001 to 863400, 940001 to 940600	TYPE SO	VC-305 (TYPE SO)
1320001 to 1333500	TYPE PA	VC-305 (TYPE PA)
other numbers	TYPE SO	VC-304 (TYPE SO) *1

*1: For VC-304 board, refer to the SERVICE MANUAL, LEVEL 2 SUPPLEMENT-1.

MODEL NUMBER LABEL

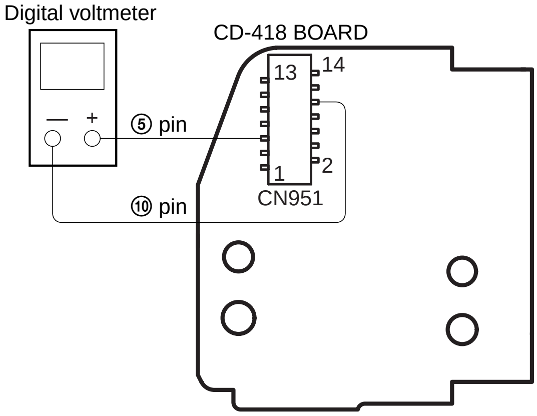

SONY®
MODEL NO. DCR-TRV250
DIGITAL VIDEO CAMERA RECORDER
SONY CORPORATION
Tested To Comply With FCC Standards
FOR HOME OR OFFICE USE
7.2V
RECYCLE
RBRC
Li-ion
1.800.822.8837
Serial No.

1-5-2. Checking Method by Voltage

Checking method:

1) Refer to “SECTION 2 DISASSEMBLY” to remove the cabinet (R) block.
2) Set the POWER switch to CAMERA.
3) By measuring the voltage between Pin ⑤ (CAM_15V/12V) to Pin ⑩ (GND) of CN951 on CD-418 board, the type of CCD imager can be discriminated.

Voltage	CCD type
12V	TYPE PA
15V	TYPE SO


Digital voltmeter
CD-418 BOARD
—
+
⑤ pin
⑩ pin
13
14
1
2
CN951

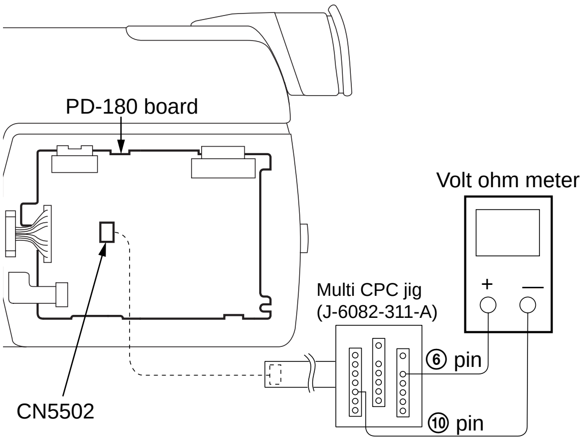
1-6. LCD TYPE CHECK

By measuring the resistor value between Pin ⑥ of CN5502 and Pin ⑩ of CN5502 on PD-180 board, the type of LCD can be discriminated.

Note: About PD-180 board and LCD module, discriminate LCD type on the machine, and replace the same type.

PD-180 board CN5502

Resistor value	LCD type	PD board
2.2 kΩ	TYPE S	PD-180 (TYPE S)
3.3 kΩ	TYPE C	PD-180 (TYPE C)


PD-180 board
Volt ohm meter
+
—
Multi CPC jig
(J-6082-311-A)
⑥ pin
⑩ pin
CN5502

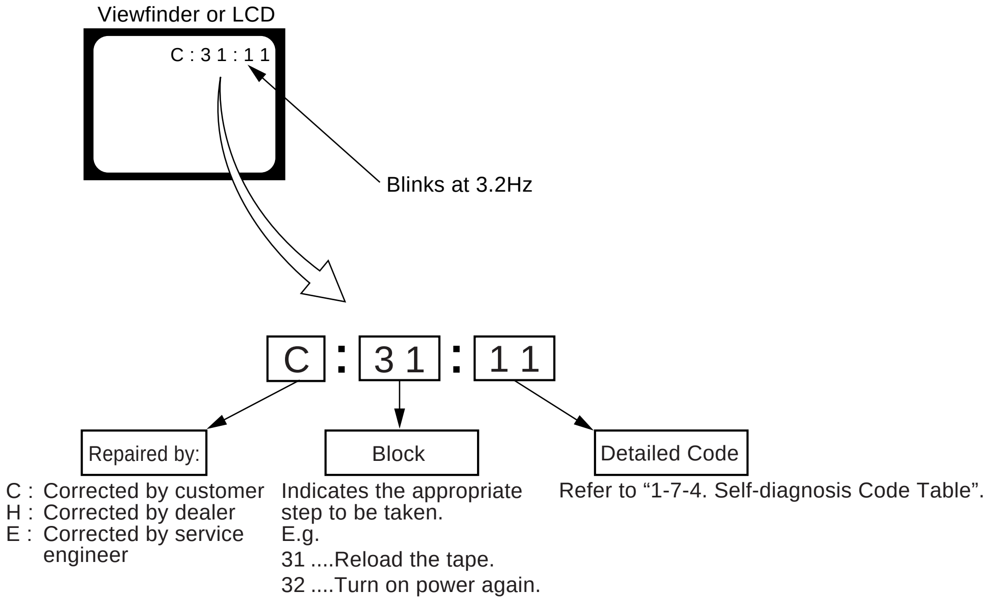
1-7. SELF-DIAGNOSIS FUNCTION

1-7-1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD what to do. This function consists of two display; self-diagnosis display and service mode display.
Details of the self-diagnosis functions are provided in the Instruction manual.

1-7-2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or LCD shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.



C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer

Indicates the appropriate step to be taken.
E.g.
31 ....Reload the tape.
32 ....Turn on power again.

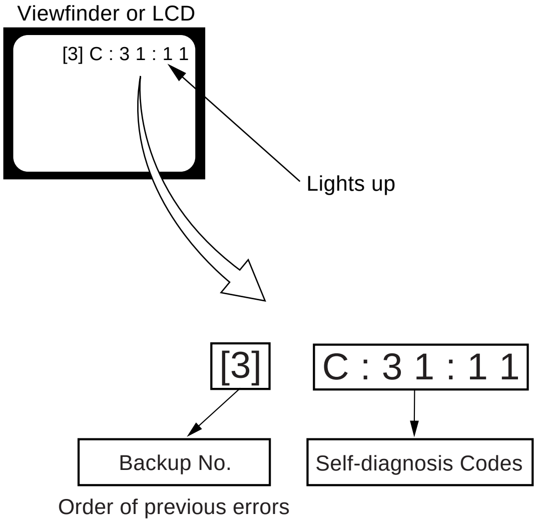
Refer to “1-7-4. Self-diagnosis Code Table”.

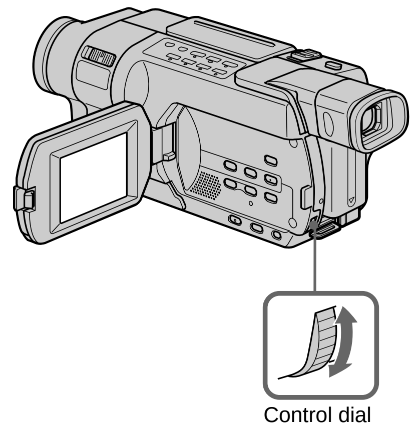
1-7-3. Service Mode Display

The service mode display shows up to six self-diagnosis codes shown in the past.

1. Display Method

While pressing the “STOP” key, set the switch from OFF to “VCR”, and continue pressing the “STOP” key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.





2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time	[3] : Occurred third time	[5] : Occurred fifth time
[2] : Occurred second time	[4] : Occurred fourth time	[6] : Occurred the last time

3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The “self-diagnosis display” data will be backed up by the lithium battery (CONTROL SWITCH BLOCK (CF-3000): BT001). When removing the cabinet (R) (removing the VC-305 board CN1007), the “self-diagnosis display” data will be lost by initialization.

1-7-4. Self-diagnosis Code Table

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
C	0 4	0 0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	2 1	0 0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2 2	0 0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3 1	1 0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	1 1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	2 0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	2 3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	3 0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3 1	3 1	FG fault during normal capstan operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 1	PG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 3	PG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 4	Phase fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 2	1 0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	1 1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 1	FG fault during normal capstan operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 0	FG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 1	PG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 2	FG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 3	PG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 4	Phase fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.

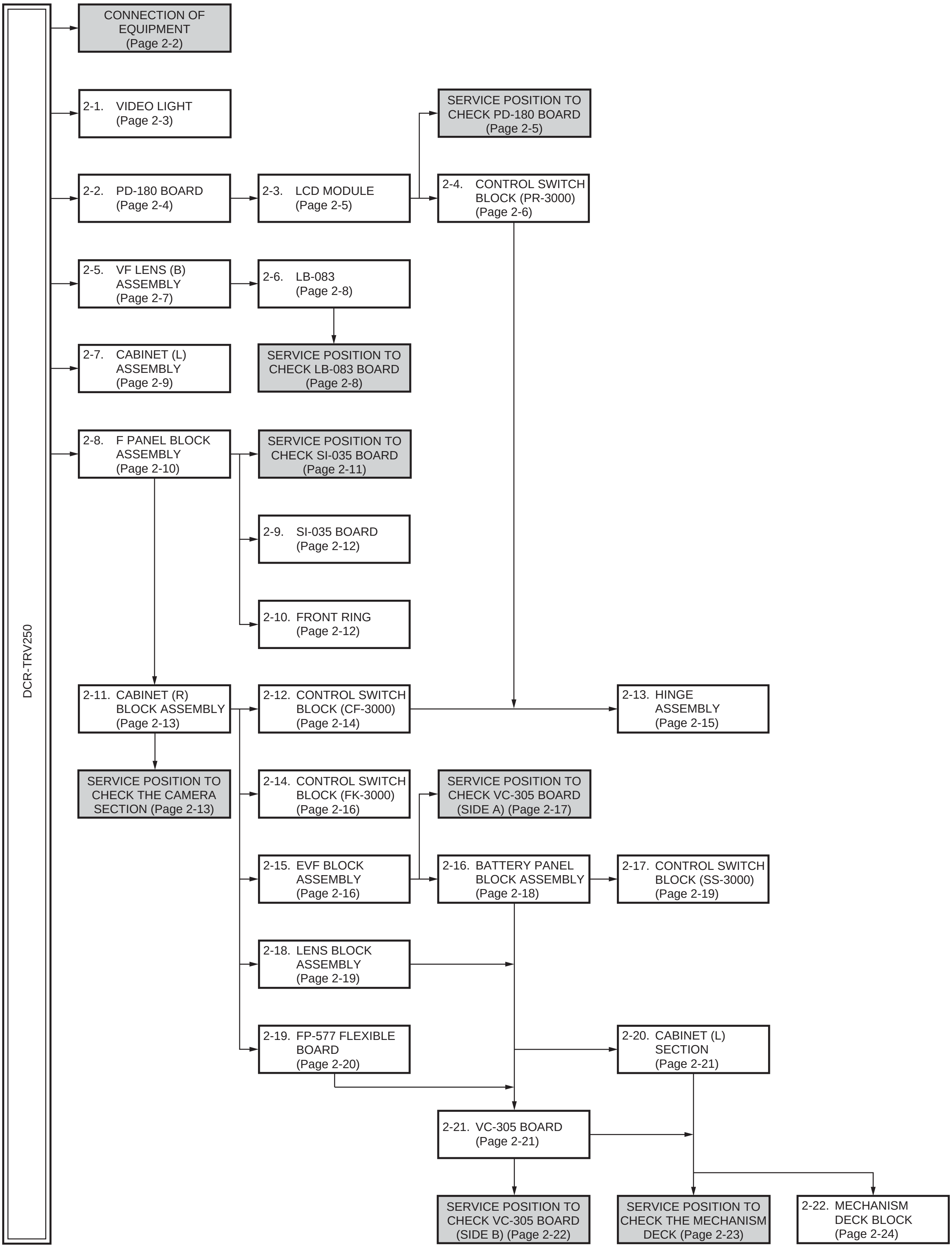
Self-diagnosis Code						Symptom/State	Correction
Repaired by:	Block Function		Detailed Code				
E	6	1	0	0		Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑫ of CN1551 of VC-305 board) when focusing is performed when the control dial is rotated in the focus manual mode and the focus motor drive circuit (IC1554 of VC-305 board) when the focusing is not performed.
E	6	1	1	0		Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ⑮ of CN1551 of VC-305 board) when zooming is performed when the zoom switch is operated and the zoom motor drive circuit (IC1554 of VC-305 board) when zooming is not performed.
E	6	2	0	0		Steadyshot function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE751 of SI-035 board) peripheral circuits.
E	6	2	0	1		Steadyshot function does not work well. (With yaw angular velocity sensor output stopped.)	Inspect yaw angular velocity sensor (SE752 of SI-035 board) peripheral circuits.

COVER

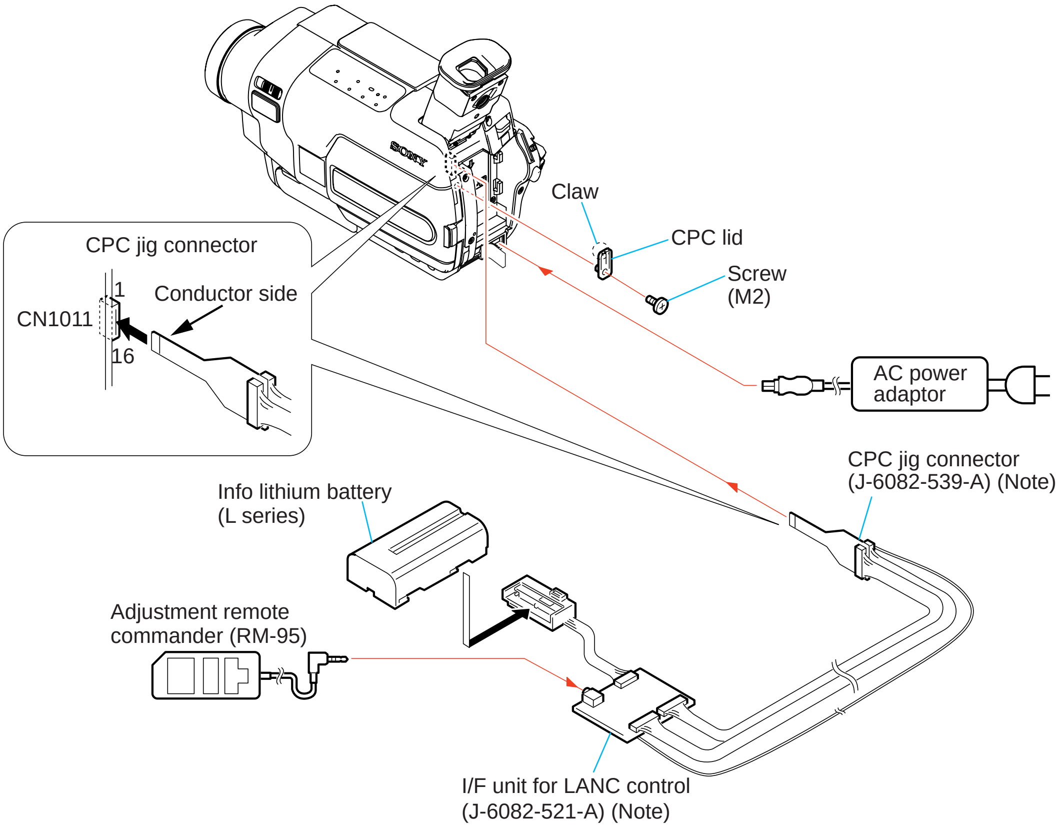
SECTION 2
DISASSEMBLY

HELP

The following flow chart shows the disassembly procedure.


DCR-TRV250
CONNECTION OF EQUIPMENT (Page 2-2)
2-1. VIDEO LIGHT (Page 2-3)
SERVICE POSITION TO CHECK PD-180 BOARD (Page 2-5)
2-2. PD-180 BOARD (Page 2-4)
2-3. LCD MODULE (Page 2-5)
2-4. CONTROL SWITCH BLOCK (PR-3000) (Page 2-6)
2-5. VF LENS (B) ASSEMBLY (Page 2-7)
2-6. LB-083 (Page 2-8)
2-7. CABINET (L) ASSEMBLY (Page 2-9)
SERVICE POSITION TO CHECK LB-083 BOARD (Page 2-8)
2-8. F PANEL BLOCK ASSEMBLY (Page 2-10)
SERVICE POSITION TO CHECK SI-035 BOARD (Page 2-11)
2-9. SI-035 BOARD (Page 2-12)
2-10. FRONT RING (Page 2-12)
2-11. CABINET (R) BLOCK ASSEMBLY (Page 2-13)
2-12. CONTROL SWITCH BLOCK (CF-3000) (Page 2-14)
2-13. HINGE ASSEMBLY (Page 2-15)
SERVICE POSITION TO CHECK THE CAMERA SECTION (Page 2-13)
2-14. CONTROL SWITCH BLOCK (FK-3000) (Page 2-16)
SERVICE POSITION TO CHECK VC-305 BOARD (SIDE A) (Page 2-17)
2-15. EVF BLOCK ASSEMBLY (Page 2-16)
2-16. BATTERY PANEL BLOCK ASSEMBLY (Page 2-18)
2-17. CONTROL SWITCH BLOCK (SS-3000) (Page 2-19)
2-18. LENS BLOCK ASSEMBLY (Page 2-19)
2-19. FP-577 FLEXIBLE BOARD (Page 2-20)
2-20. CABINET (L) SECTION (Page 2-21)
2-21. VC-305 BOARD (Page 2-21)
SERVICE POSITION TO CHECK VC-305 BOARD (SIDE B) (Page 2-22)
SERVICE POSITION TO CHECK THE MECHANISM DECK (Page 2-23)
2-22. MECHANISM DECK BLOCK (Page 2-24)

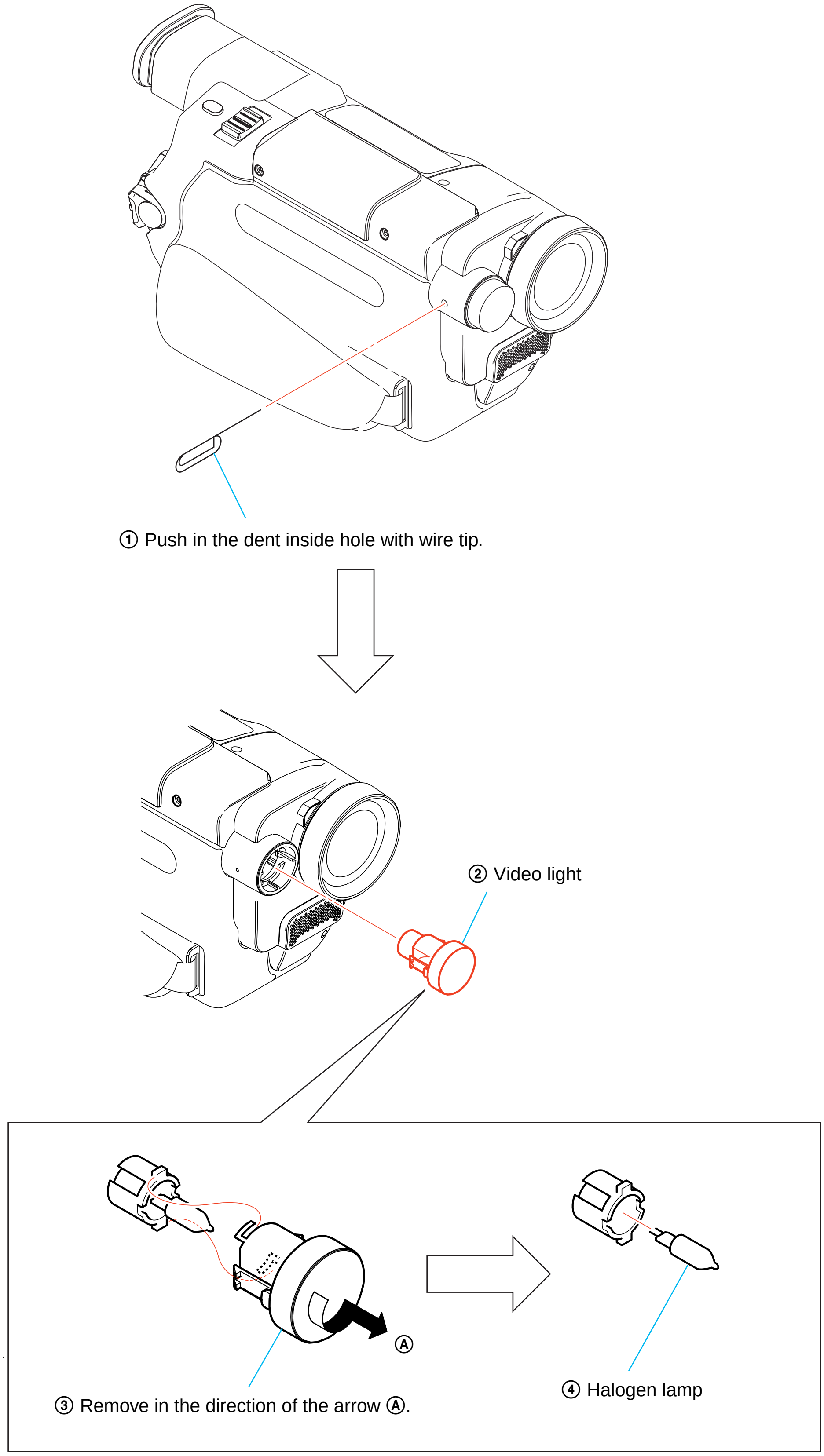
[CONNECTION OF EQUIPMENT]


CPC jig connector
CN1011
1
16
Conductor side
Claw
CPC lid
Screw
(M2)
AC power
adaptor
CPC jig connector
(J-6082-539-A) (Note)
Info lithium battery
(L series)
Adjustment remote
commander (RM-95)
I/F unit for LANC control
(J-6082-521-A) (Note)

Note : The "Jig Modification" is necessary for connecting the adjusting remote commander to this set. Modify the jig by referring to page 1-3.

Note: Follow the disassembly procedure in the numerical order given.

2-1. VIDEO LIGHT



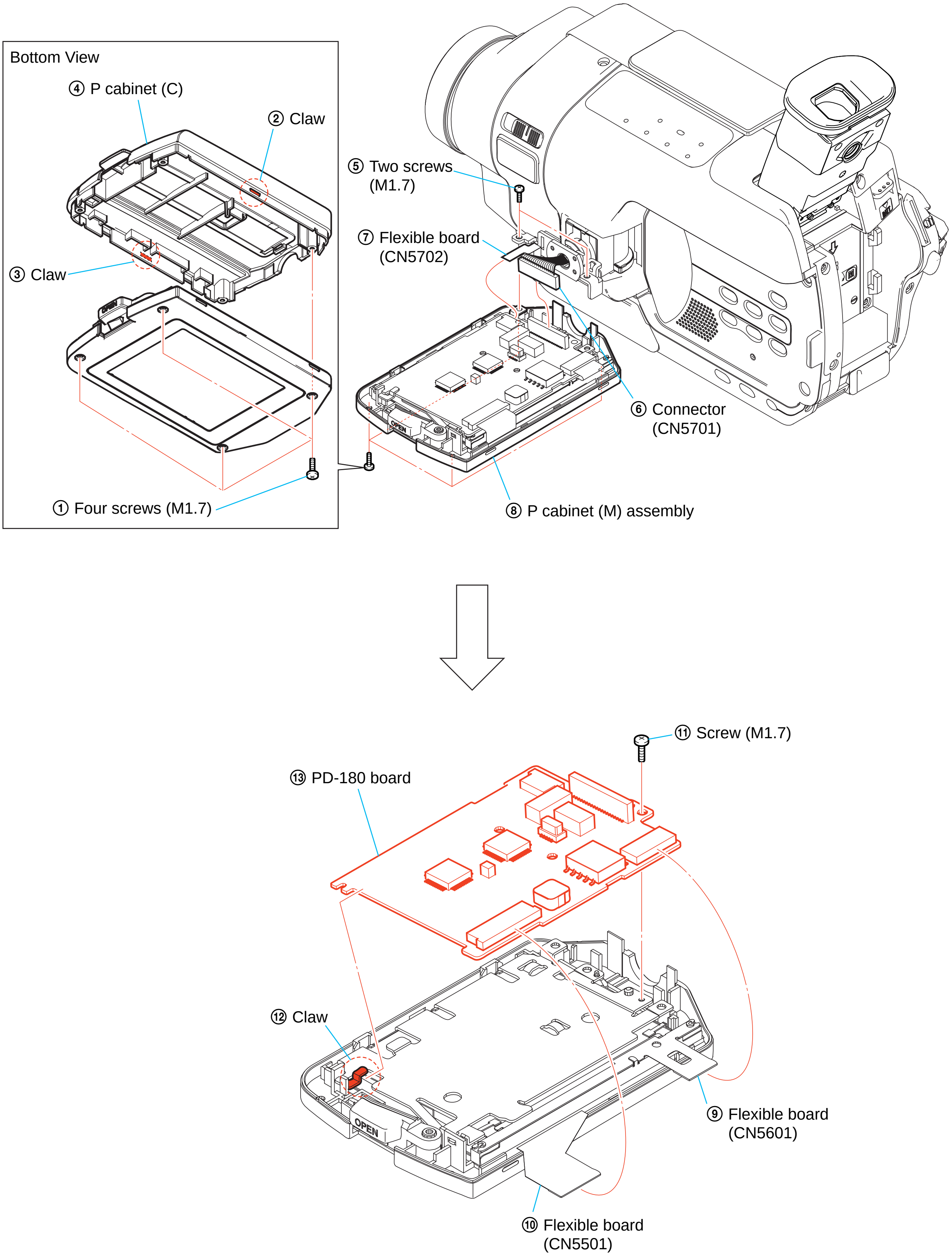
① Push in the dent inside hole with wire tip.

② Video light

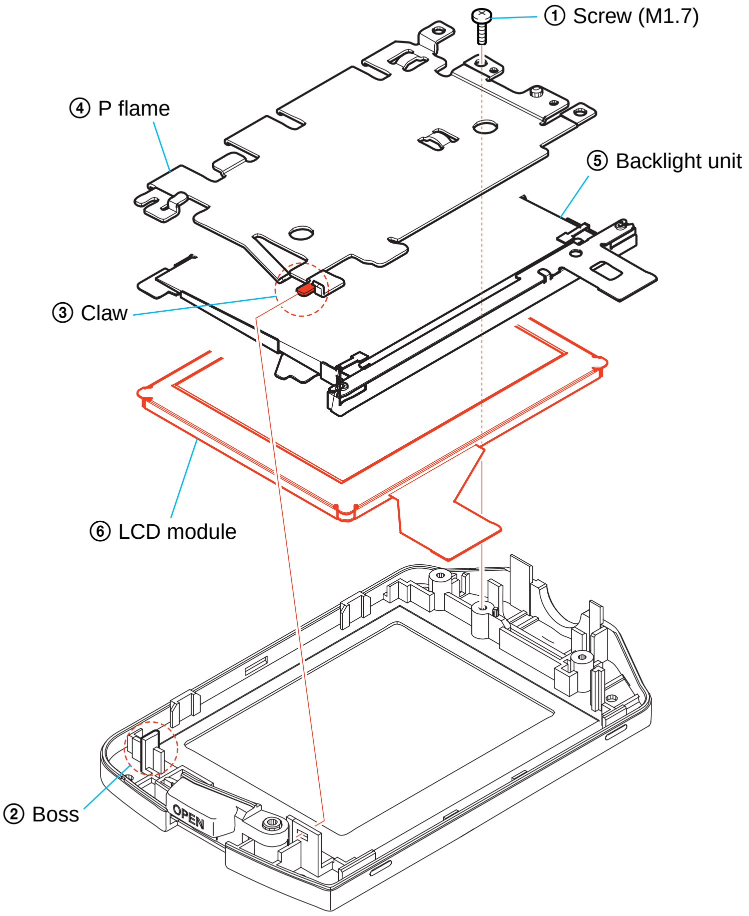
③ Remove in the direction of the arrow Ⓐ.

④ Halogen lamp

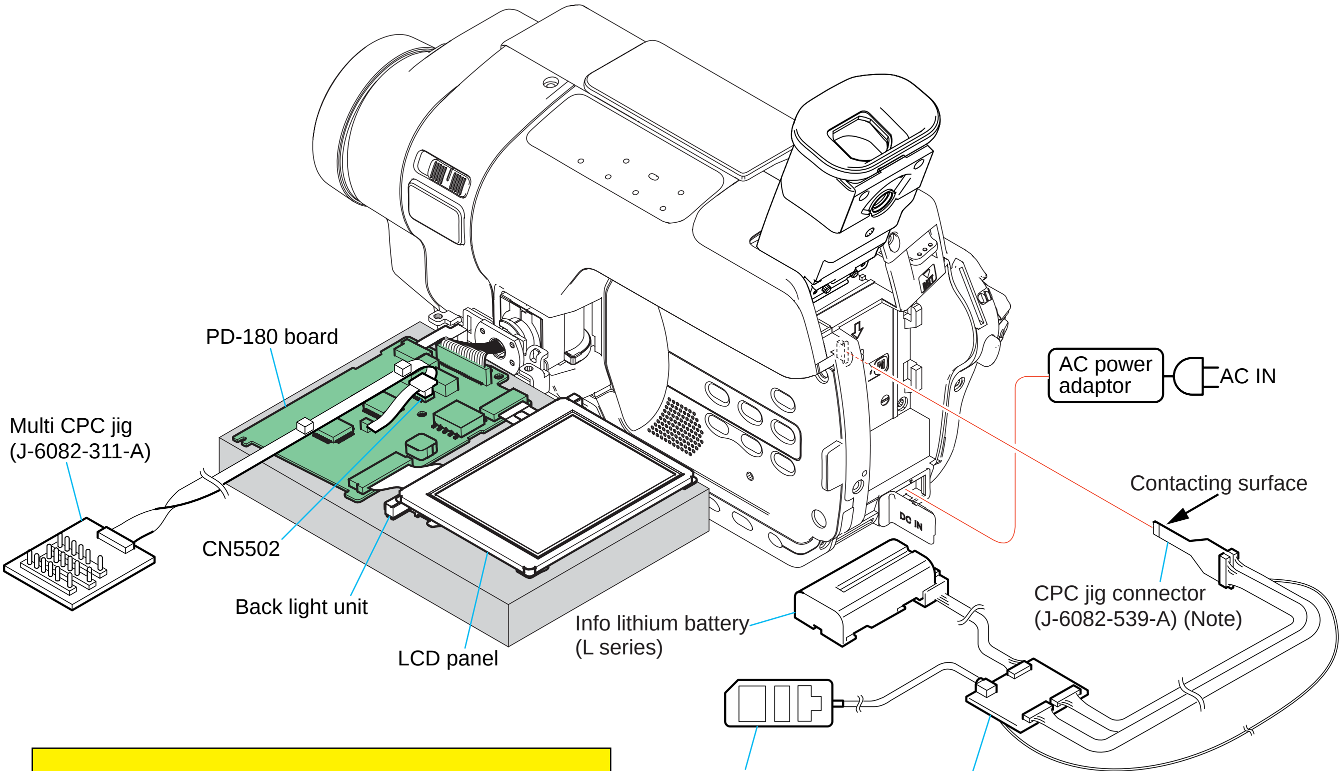
2-2. PD-180 BOARD


Bottom View
④ P cabinet (C)
② Claw
③ Claw
① Four screws (M1.7)
⑤ Two screws (M1.7)
⑦ Flexible board (CN5702)
⑥ Connector (CN5701)
⑧ P cabinet (M) assembly
OPEN
⑪ Screw (M1.7)
⑬ PD-180 board
⑫ Claw
⑨ Flexible board (CN5601)
⑩ Flexible board (CN5501)
OPEN

2-3. LCD MODULE

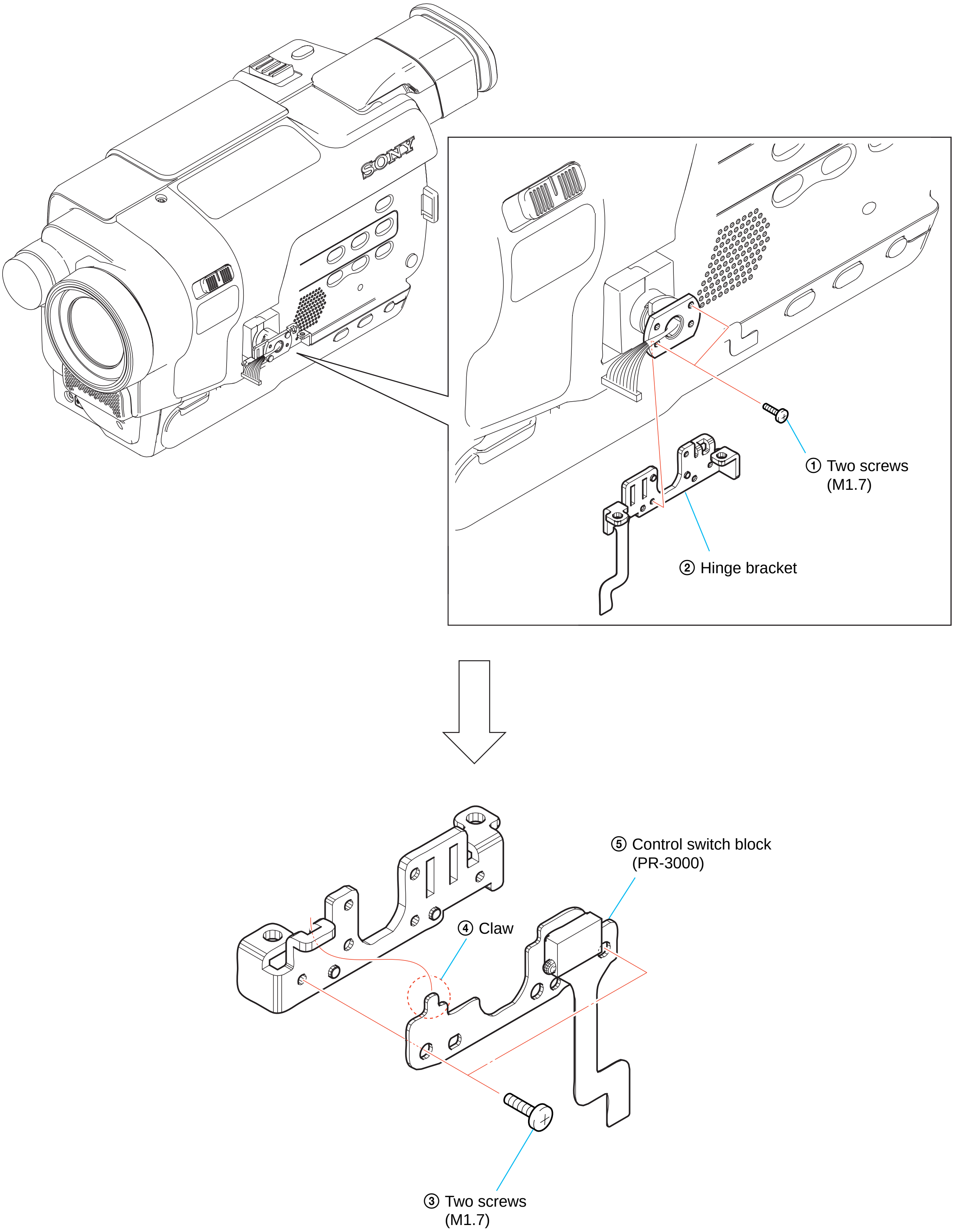

① Screw (M1.7)
④ P flame
⑤ Backlight unit
③ Claw
⑥ LCD module
② Boss
OPEN

[SERVICE POSITION TO CHECK PD-180 BOARD]

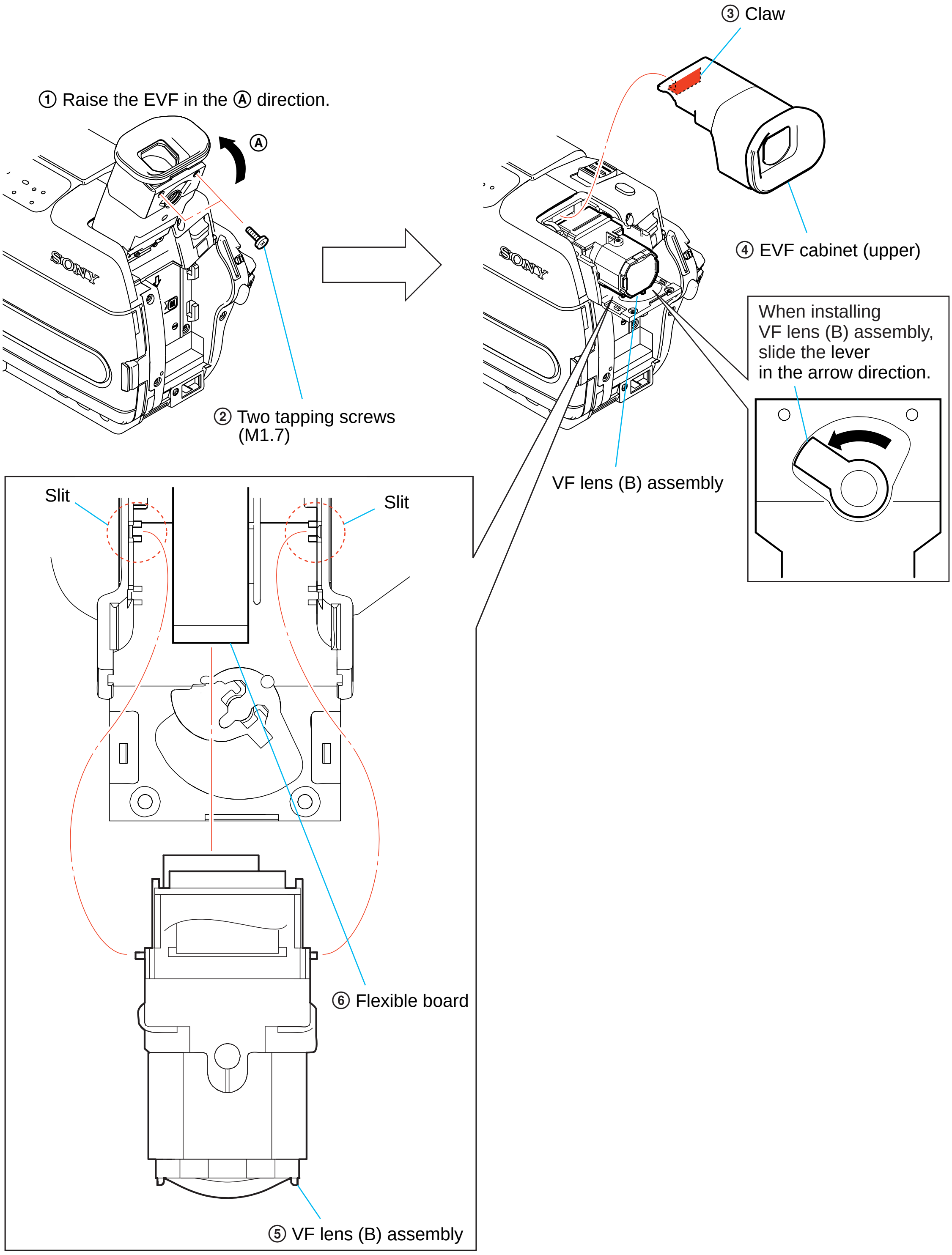

PD-180 board
Multi CPC jig
(J-6082-311-A)
CN5502
Back light unit
LCD panel
Info lithium battery
(L series)
AC power
adaptor
AC IN
Contacting surface
CPC jig connector
(J-6082-539-A) (Note)
Adjustment remote
commander (RM-95)
I/F unit for LANC control
(J-6082-521-A) (Note)
DC IN

Note : The "Jig Modification" is necessary for connecting the adjusting remote commander to this set. Modify the jig by referring to page 1-3.

2-4. CONTROL SWITCH BLOCK (PR-3000)


① Two screws
(M1.7)
② Hinge bracket
⑤ Control switch block
(PR-3000)
④ Claw
③ Two screws
(M1.7)

2-5. VF LENS (B) ASSEMBLY



① Raise the EVF in the Ⓐ direction.

② Two tapping screws (M1.7)

③ Claw

④ EVF cabinet (upper)

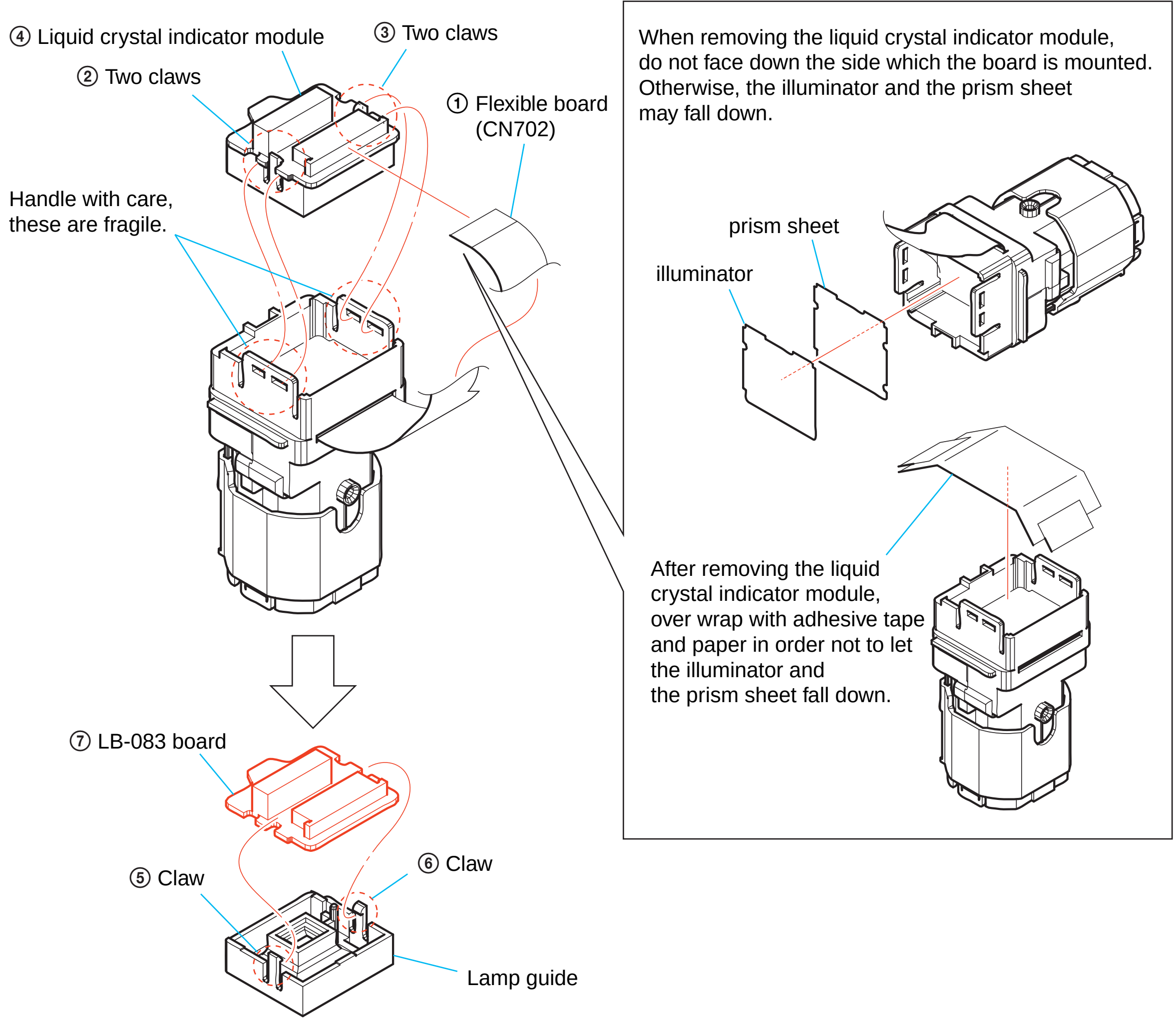
When installing VF lens (B) assembly, slide the lever in the arrow direction.

⑤ VF lens (B) assembly

⑥ Flexible board

Ⓐ
VF lens (B) assembly
Slit
Slit

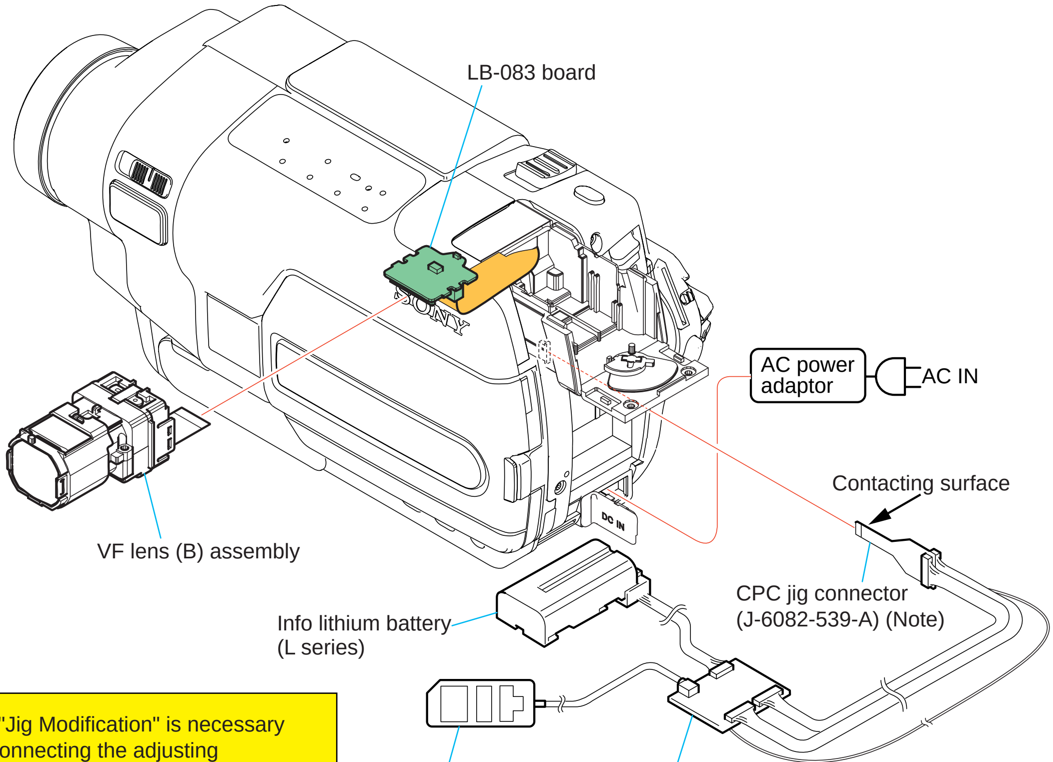
2-6. LB-083 BOARD


④ Liquid crystal indicator module
③ Two claws
② Two claws
① Flexible board (CN702)
Handle with care, these are fragile.
⑦ LB-083 board
⑥ Claw
⑤ Claw
Lamp guide
prism sheet
illuminator

When removing the liquid crystal indicator module, do not face down the side which the board is mounted. Otherwise, the illuminator and the prism sheet may fall down.

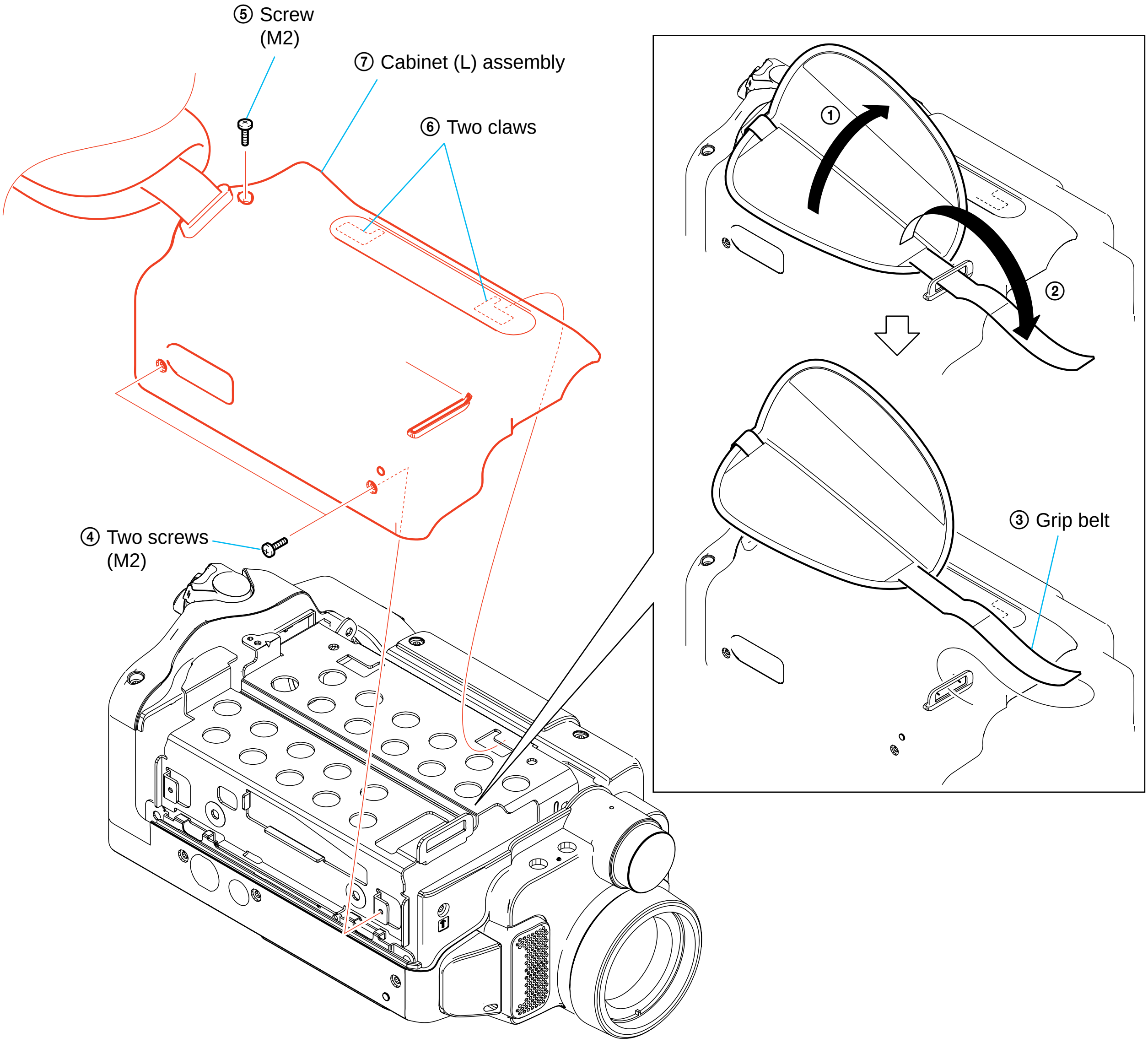
After removing the liquid crystal indicator module, over wrap with adhesive tape and paper in order not to let the illuminator and the prism sheet fall down.

[SERVICE POSITION TO CHECK LB-083 BOARD]

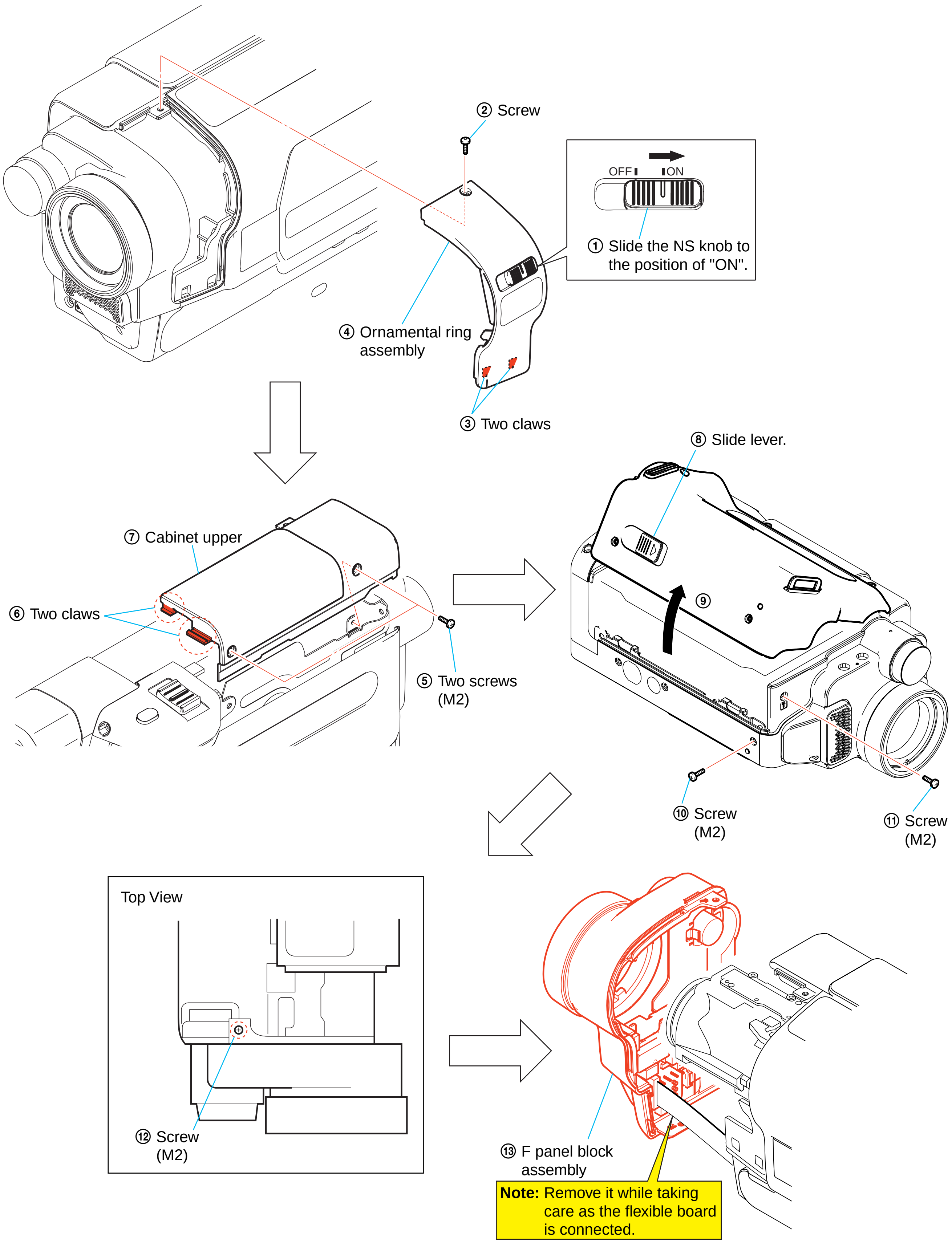

LB-083 board
AC power adaptor
AC IN
Contacting surface
CPC jig connector (J-6082-539-A) (Note)
VF lens (B) assembly
Info lithium battery (L series)
Adjustment remote commander (RM-95)
I/F unit for LANC control (J-6082-521-A) (Note)
DC IN

Note : The "Jig Modification" is necessary for connecting the adjusting remote commander to this set. Modify the jig by referring to page 1-3.

2-7. CABINET (L) ASSEMBLY

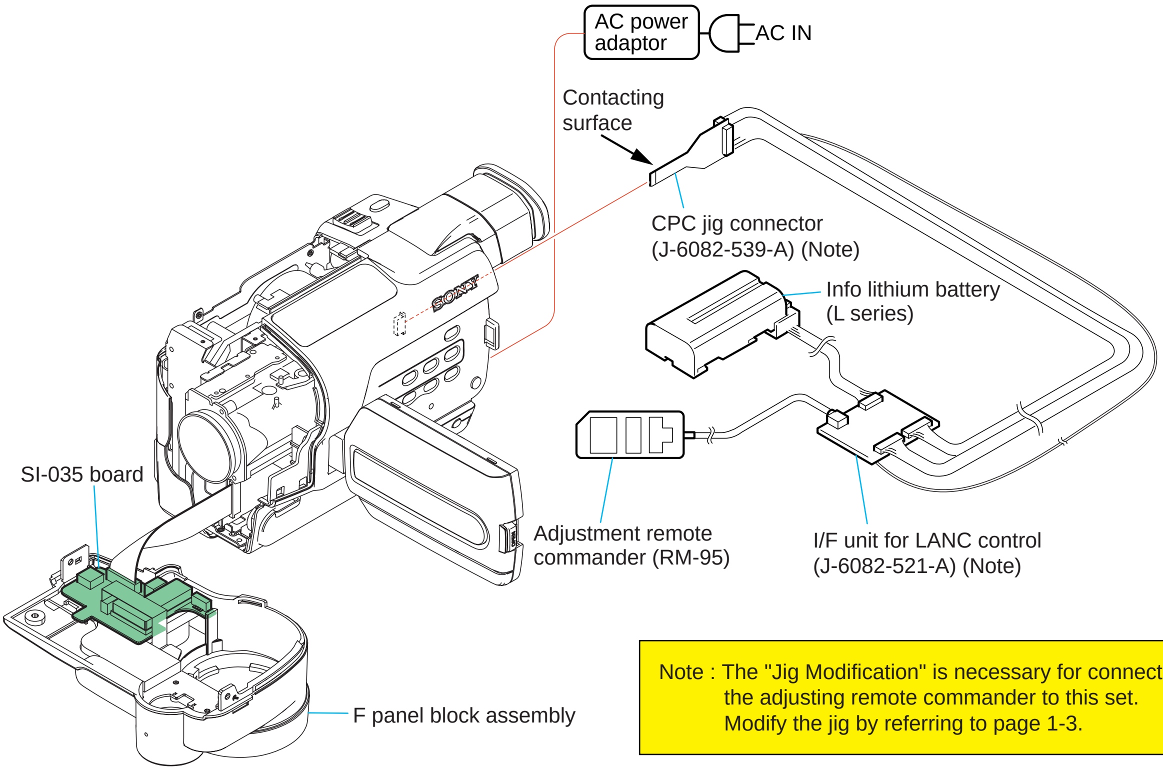

⑤ Screw
(M2)
⑦ Cabinet (L) assembly
⑥ Two claws
④ Two screws
(M2)
①
②
③ Grip belt

2-8. F PANEL BLOCK ASSEMBLY


② Screw
OFF
ON
① Slide the NS knob to the position of "ON".
④ Ornamental ring assembly
③ Two claws
⑧ Slide lever.
⑦ Cabinet upper
⑥ Two claws
⑤ Two screws (M2)
⑨
⑩ Screw (M2)
⑪ Screw (M2)
Top View
⑫ Screw (M2)
⑬ F panel block assembly

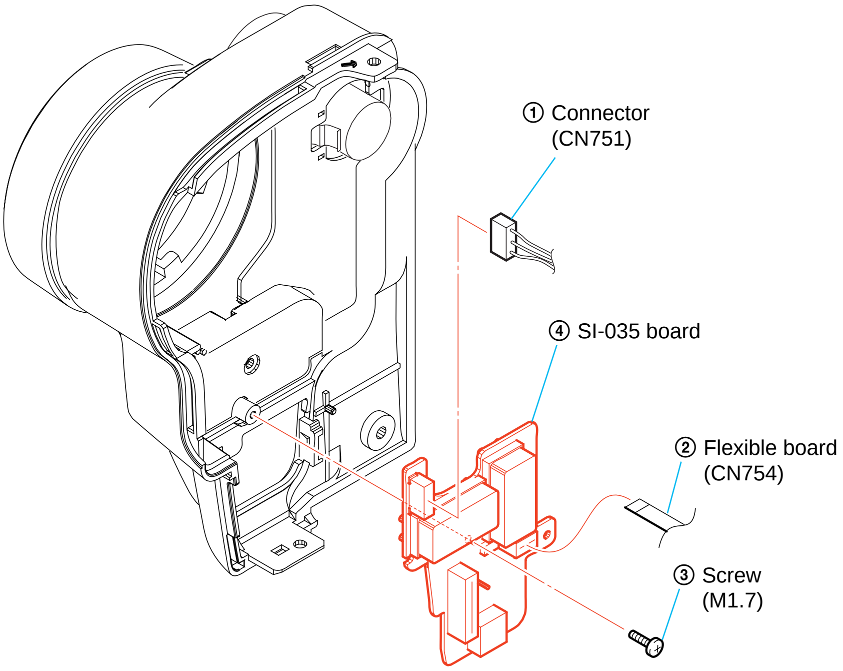
Note: Remove it while taking care as the flexible board is connected.

[SERVICE POSITION TO CHECK SI-035 BOARD]

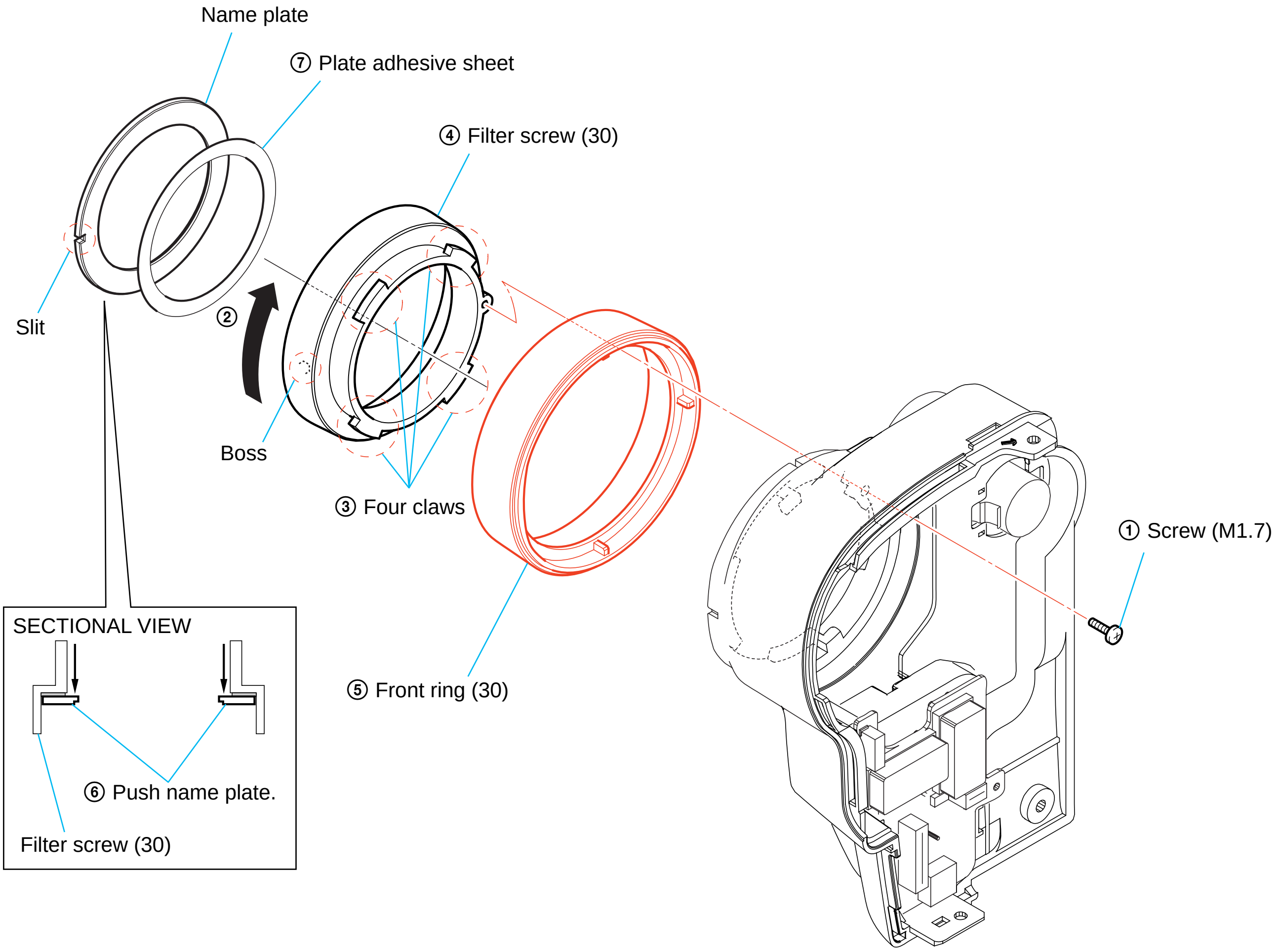

AC power adaptor
AC IN
Contacting surface
CPC jig connector (J-6082-539-A) (Note)
Info lithium battery (L series)
SI-035 board
Adjustment remote commander (RM-95)
I/F unit for LANC control (J-6082-521-A) (Note)
F panel block assembly

Note : The "Jig Modification" is necessary for connecting the adjusting remote commander to this set. Modify the jig by referring to page 1-3.

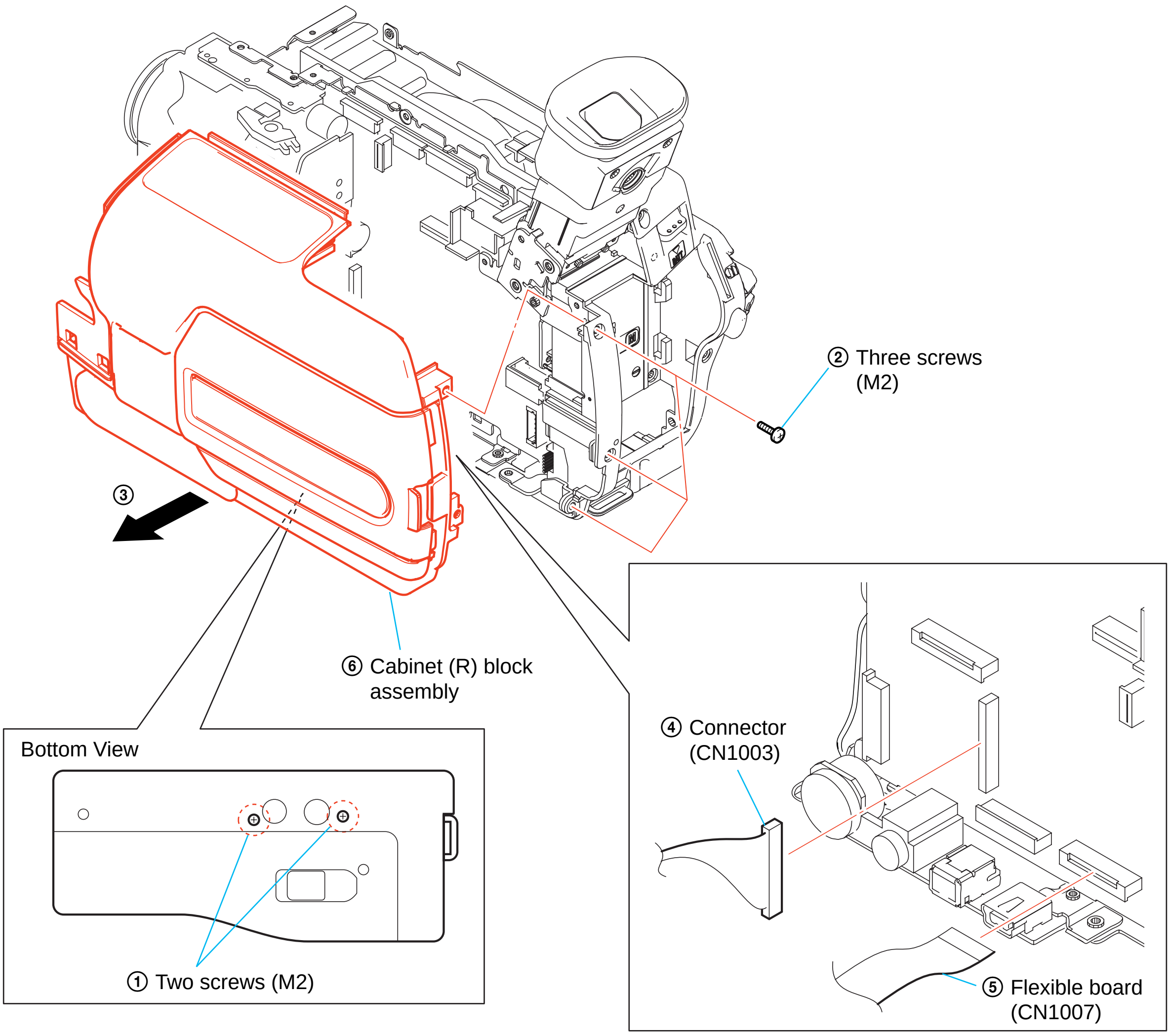
2-9. SI-035 BOARD


① Connector
(CN751)
④ SI-035 board
② Flexible board
(CN754)
③ Screw
(M1.7)

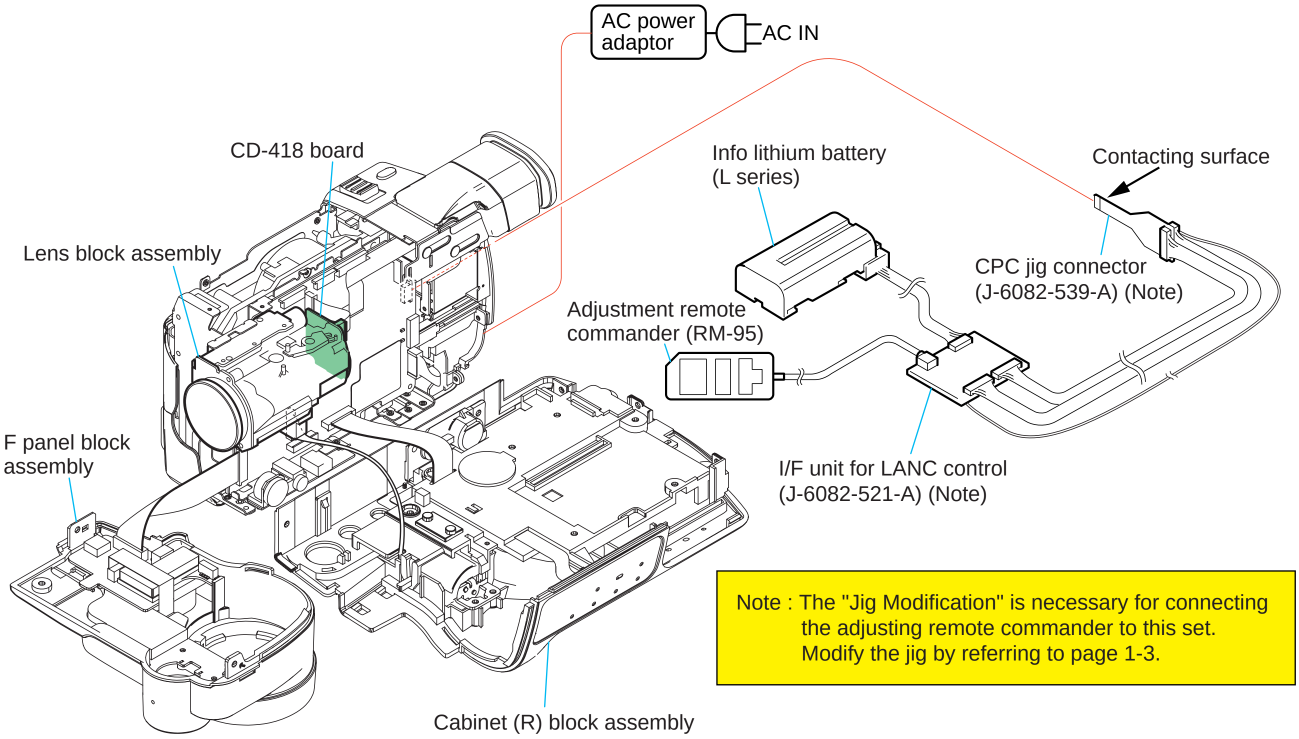
2-10. FRONT RING


Name plate
⑦ Plate adhesive sheet
④ Filter screw (30)
Slit
②
Boss
③ Four claws
① Screw (M1.7)
⑤ Front ring (30)
SECTIONAL VIEW
⑥ Push name plate.
Filter screw (30)

2-11. CABINET (R) BLOCK ASSEMBLY

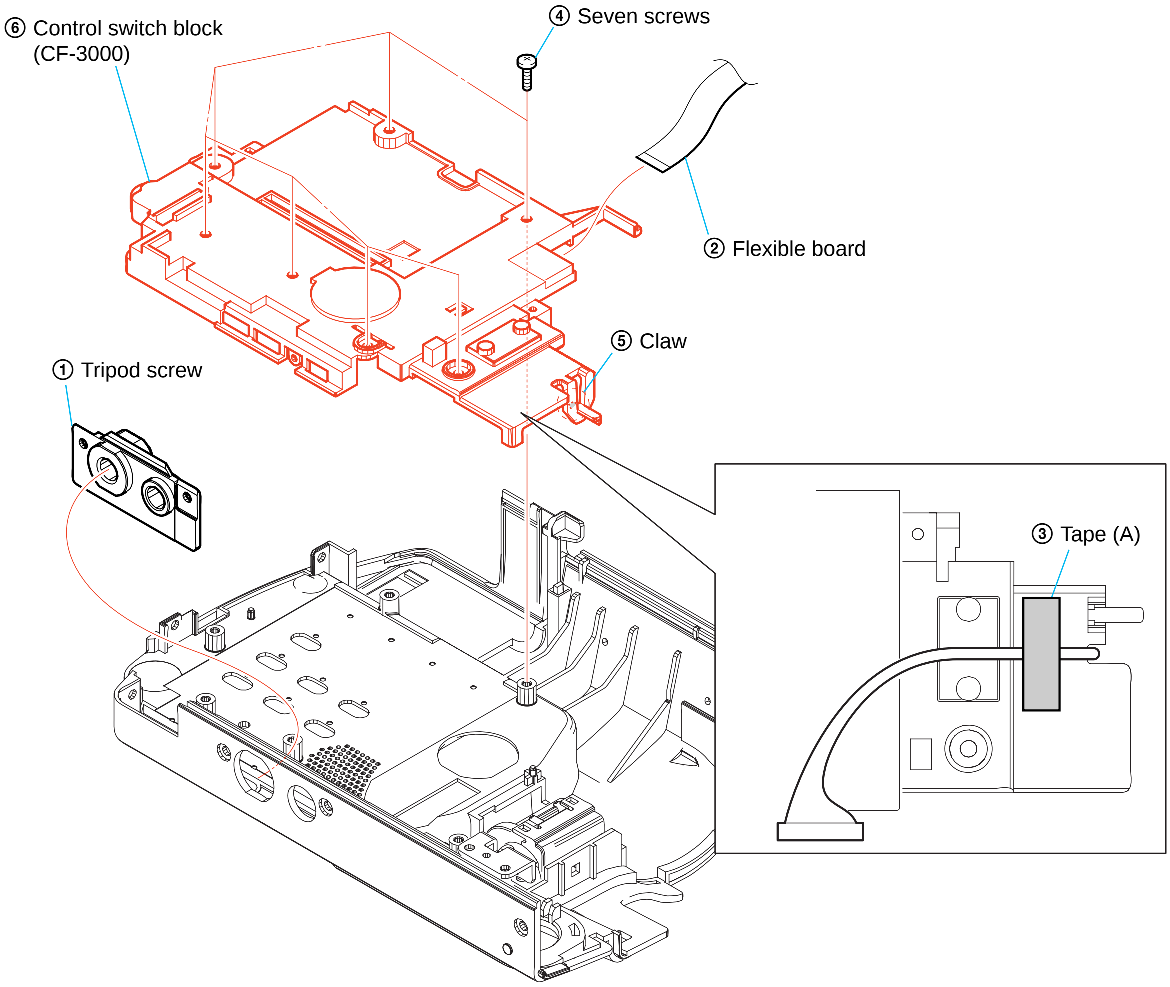

② Three screws
(M2)
③
⑥ Cabinet (R) block
assembly
Bottom View
① Two screws (M2)
④ Connector
(CN1003)
⑤ Flexible board
(CN1007)

[SERVICE POSITION TO CHECK THE CAMERA SECTION]

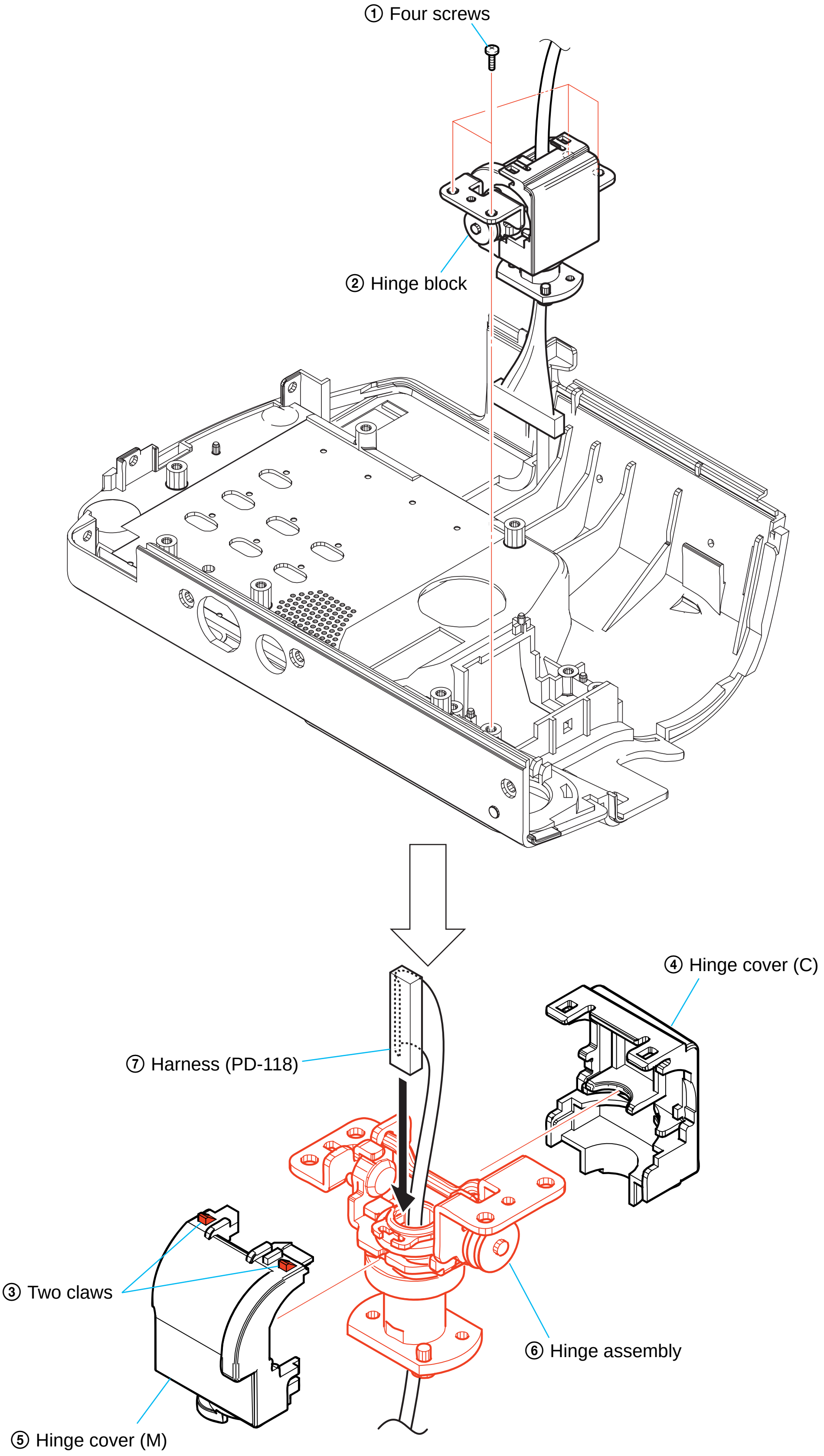

AC power
adaptor
AC IN
CD-418 board
Info lithium battery
(L series)
Contacting surface
Lens block assembly
CPC jig connector
(J-6082-539-A) (Note)
Adjustment remote
commander (RM-95)
F panel block
assembly
I/F unit for LANC control
(J-6082-521-A) (Note)
Cabinet (R) block assembly

Note : The "Jig Modification" is necessary for connecting the adjusting remote commander to this set. Modify the jig by referring to page 1-3.

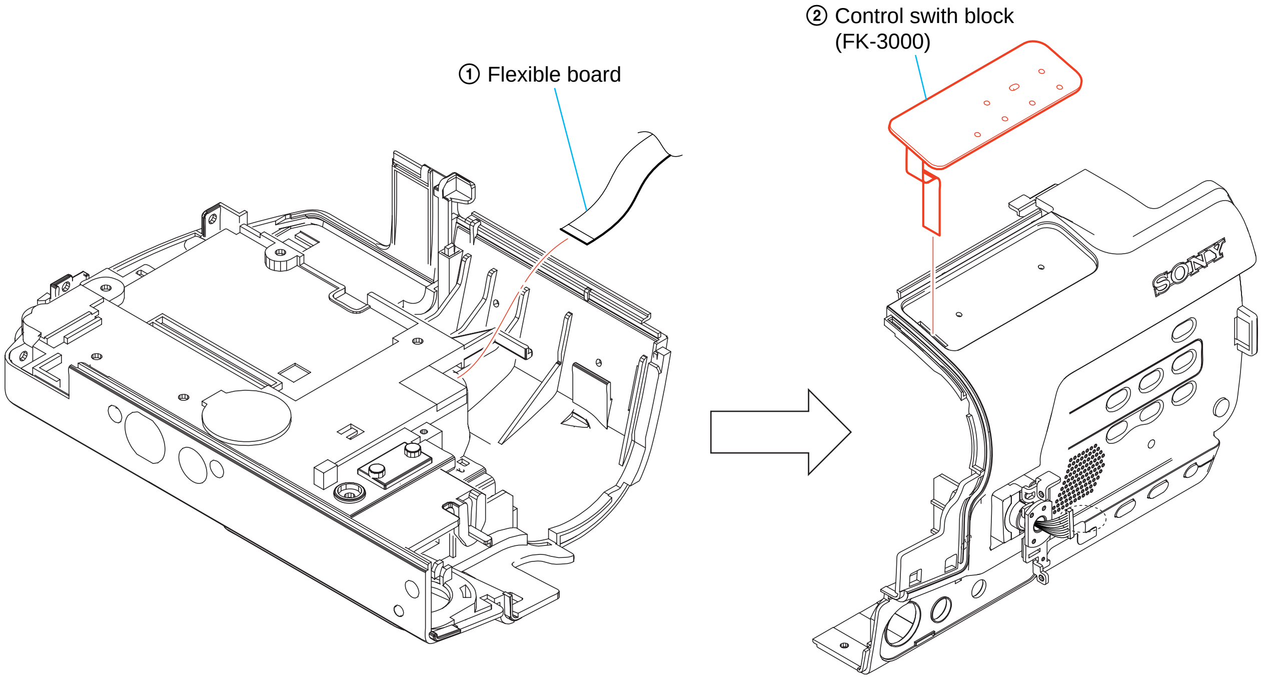
2-12. CONTROL SWITCH BLOCK (CF-3000)


⑥ Control switch block (CF-3000)
④ Seven screws
② Flexible board
⑤ Claw
① Tripod screw
③ Tape (A)

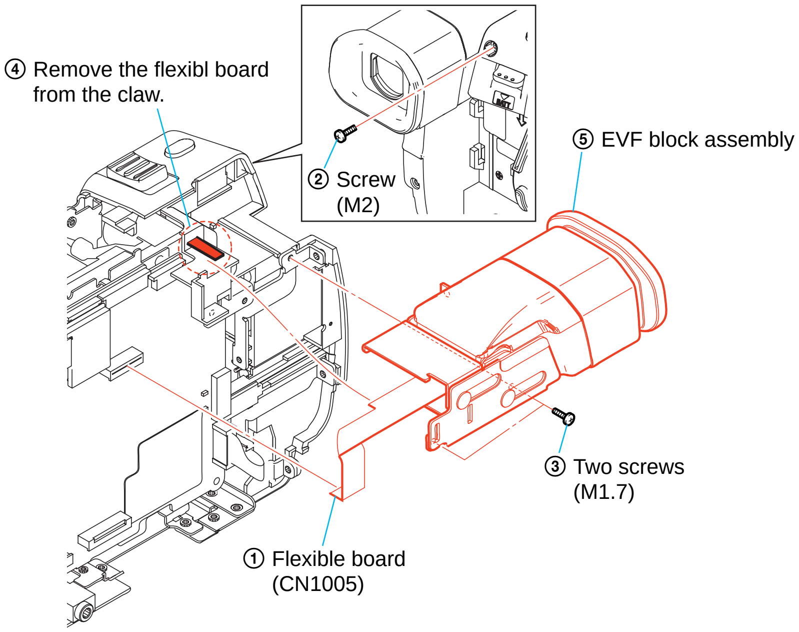
2-13. HINGE ASSEMBLY


① Four screws
② Hinge block
④ Hinge cover (C)
⑦ Harness (PD-118)
③ Two claws
⑥ Hinge assembly
⑤ Hinge cover (M)

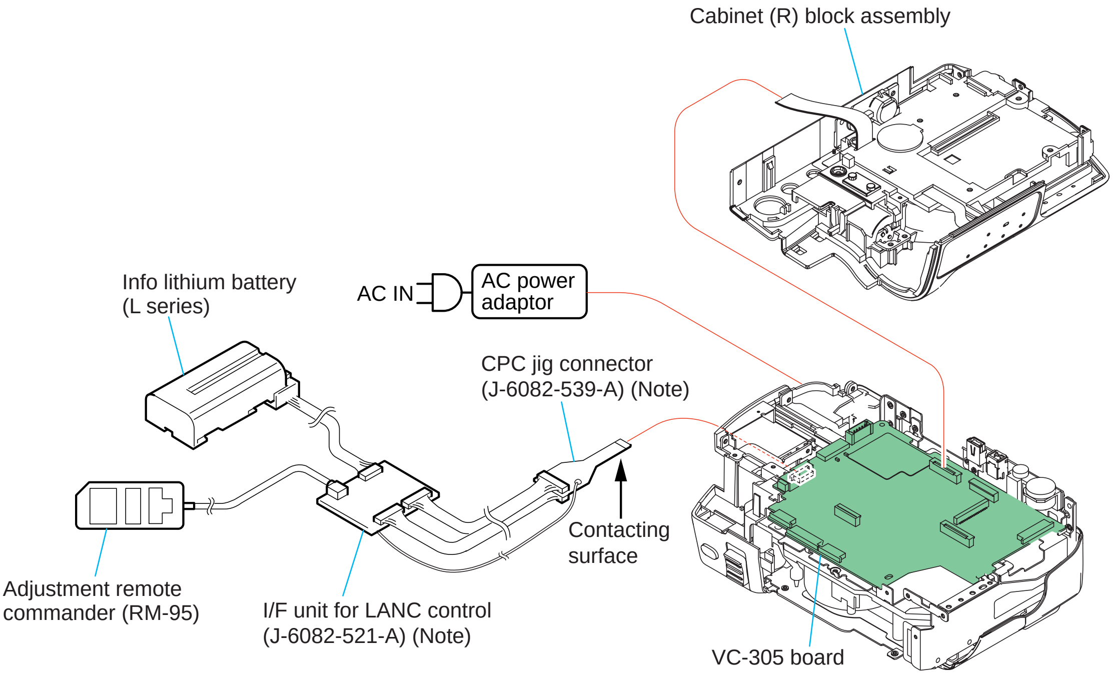
2-14. CONTROL SWITCH BLOCK (FK-3000)


② Control swith block
(FK-3000)
① Flexible board
SONY

2-15. EVF BLOCK ASSEMBLY

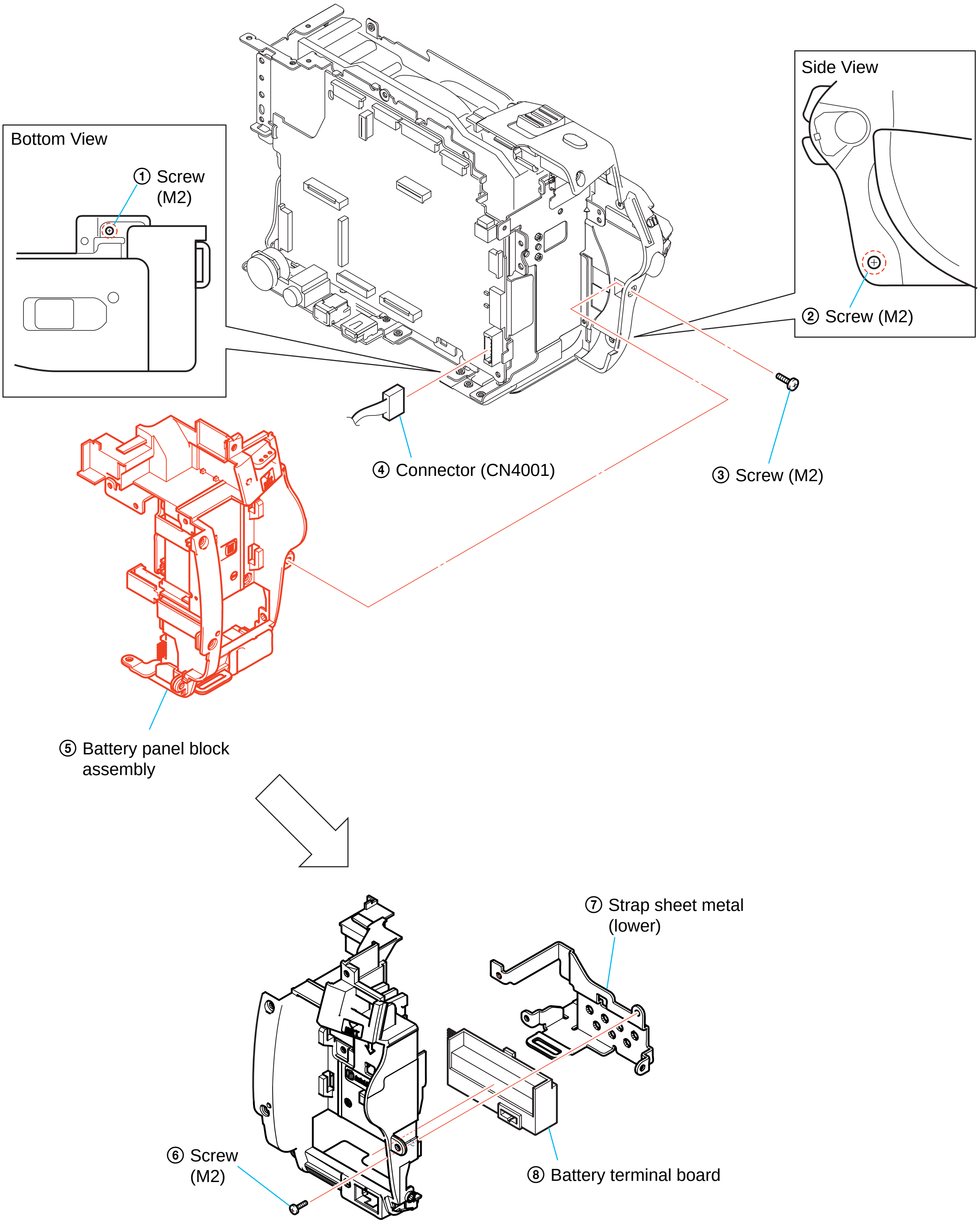

④ Remove the flexibl board
from the claw.
② Screw
(M2)
⑤ EVF block assembly
③ Two screws
(M1.7)
① Flexible board
(CN1005)

[SERVICE POSITION TO CHECK VC-305 BOARD (SIDE A)]

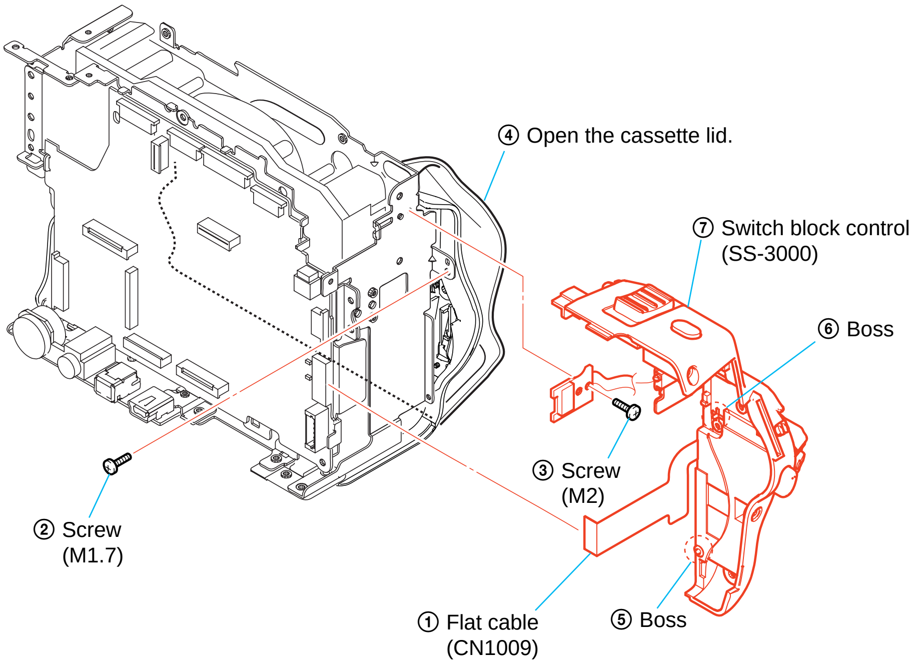

Cabinet (R) block assembly
Info lithium battery
(L series)
AC IN
AC power
adaptor
CPC jig connector
(J-6082-539-A) (Note)
Contacting
surface
Adjustment remote
commander (RM-95)
I/F unit for LANC control
(J-6082-521-A) (Note)
VC-305 board

Note : The "Jig Modification" is necessary for connecting the adjusting remote commander to this set. Modify the jig by referring to page 1-3.

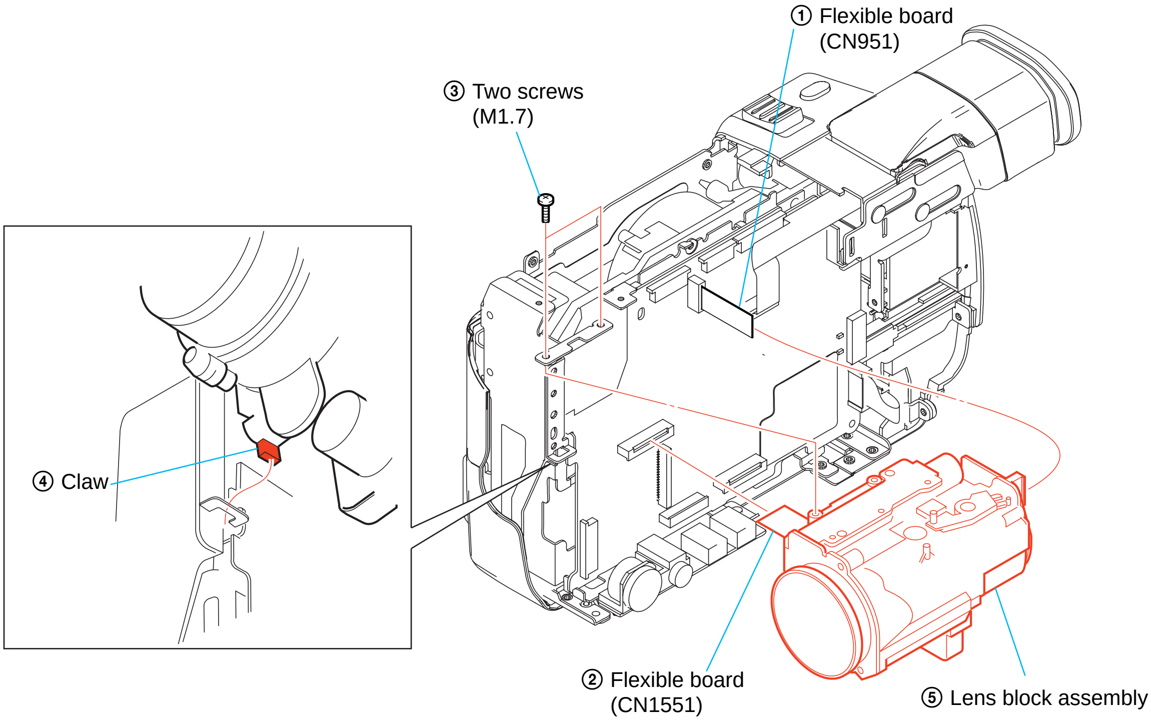
2-16. BATTERY PANEL BLOCK ASSEMBLY


Bottom View
① Screw (M2)
Side View
② Screw (M2)
③ Screw (M2)
④ Connector (CN4001)
⑤ Battery panel block assembly
⑦ Strap sheet metal (lower)
⑥ Screw (M2)
⑧ Battery terminal board

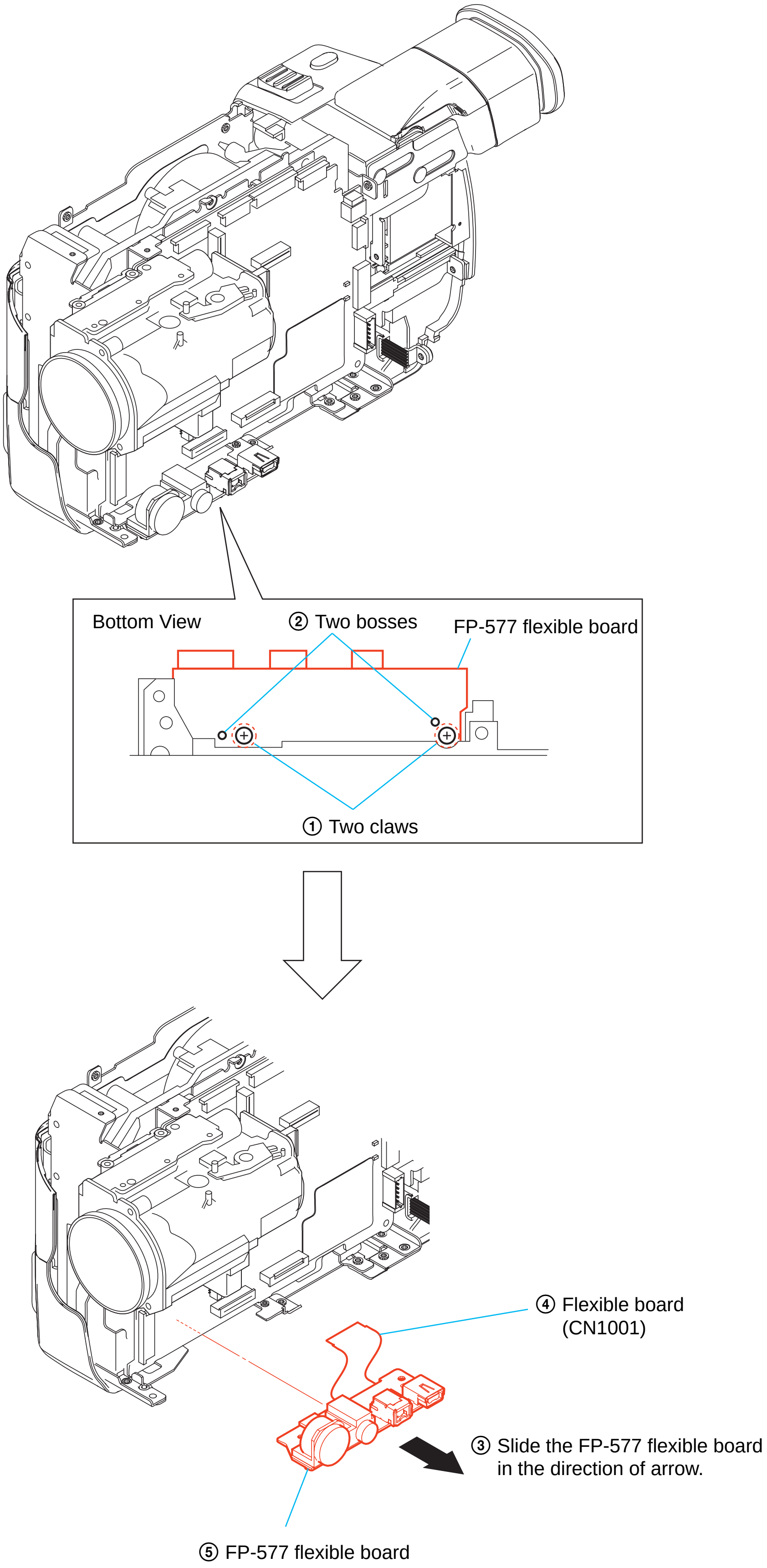
2-17. CONTROL SWITCH BLOCK (SS-3000)


④ Open the cassette lid.
⑦ Switch block control (SS-3000)
⑥ Boss
③ Screw (M2)
② Screw (M1.7)
① Flat cable (CN1009)
⑤ Boss

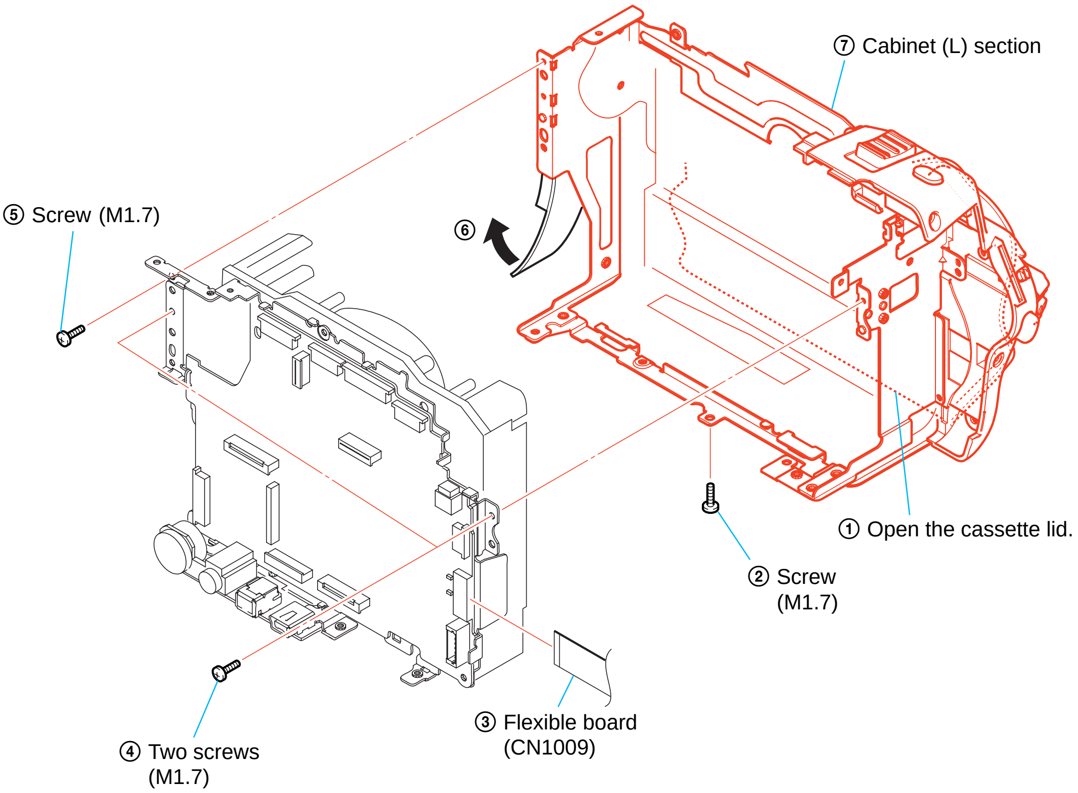
2-18. LENS BLOCK ASSEMBLY


① Flexible board (CN951)
③ Two screws (M1.7)
④ Claw
② Flexible board (CN1551)
⑤ Lens block assembly

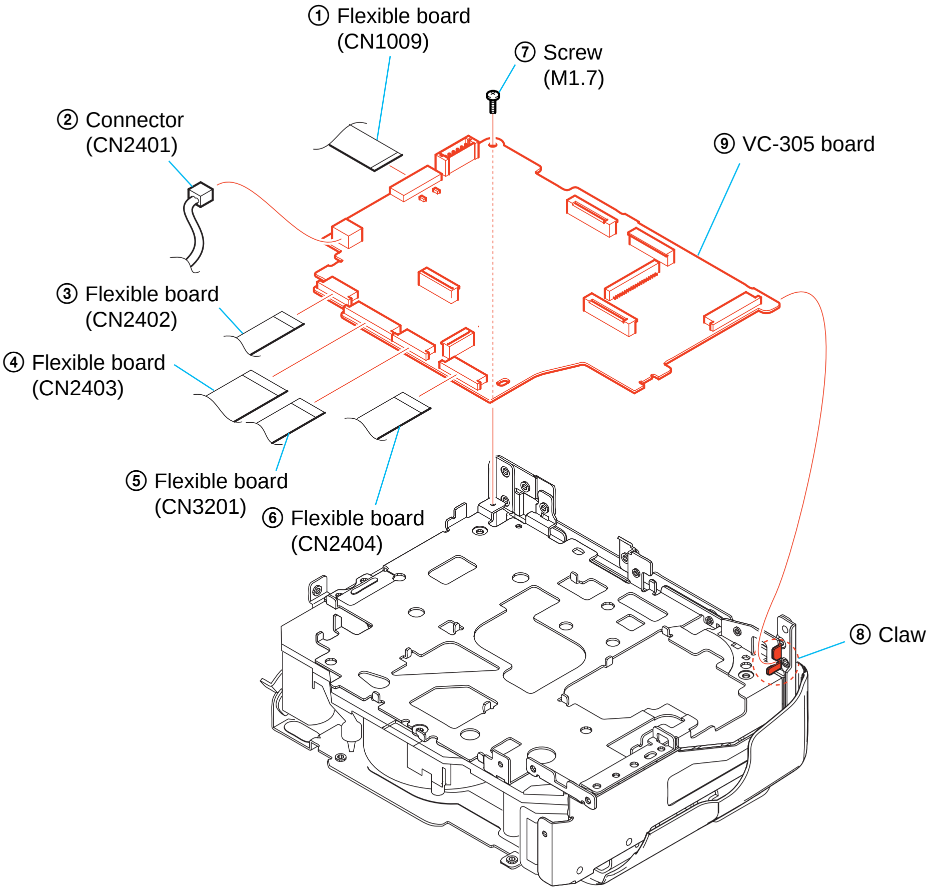
2-19. FP-577 FLEXIBLE BOARD


Bottom View
② Two bosses
FP-577 flexible board
① Two claws
④ Flexible board
(CN1001)
③ Slide the FP-577 flexible board
in the direction of arrow.
⑤ FP-577 flexible board

2-20. CABINET (L) SECTION


⑦ Cabinet (L) section
⑤ Screw (M1.7)
⑥
① Open the cassette lid.
② Screw
(M1.7)
③ Flexible board
(CN1009)
④ Two screws
(M1.7)

2-21. VC-305 BOARD


① Flexible board
(CN1009)
⑦ Screw
(M1.7)
② Connector
(CN2401)
⑨ VC-305 board
③ Flexible board
(CN2402)
④ Flexible board
(CN2403)
⑤ Flexible board
(CN3201)
⑥ Flexible board
(CN2404)
⑧ Claw

[SERVICE POSITION TO CHECK VC-305 BOARD (SIDE B)]

Connection to Check VC-305 Board (Side B)

To check VC-305 board (side B), set the camera or VTR to the "Forced camera power ON" mode.
Operate the camera functions of the zoom and focus, the VTR section using the adjustment remote commander (with the HOLD switch set in the OFF position).

Setting the "Forced Camera Power ON" mode

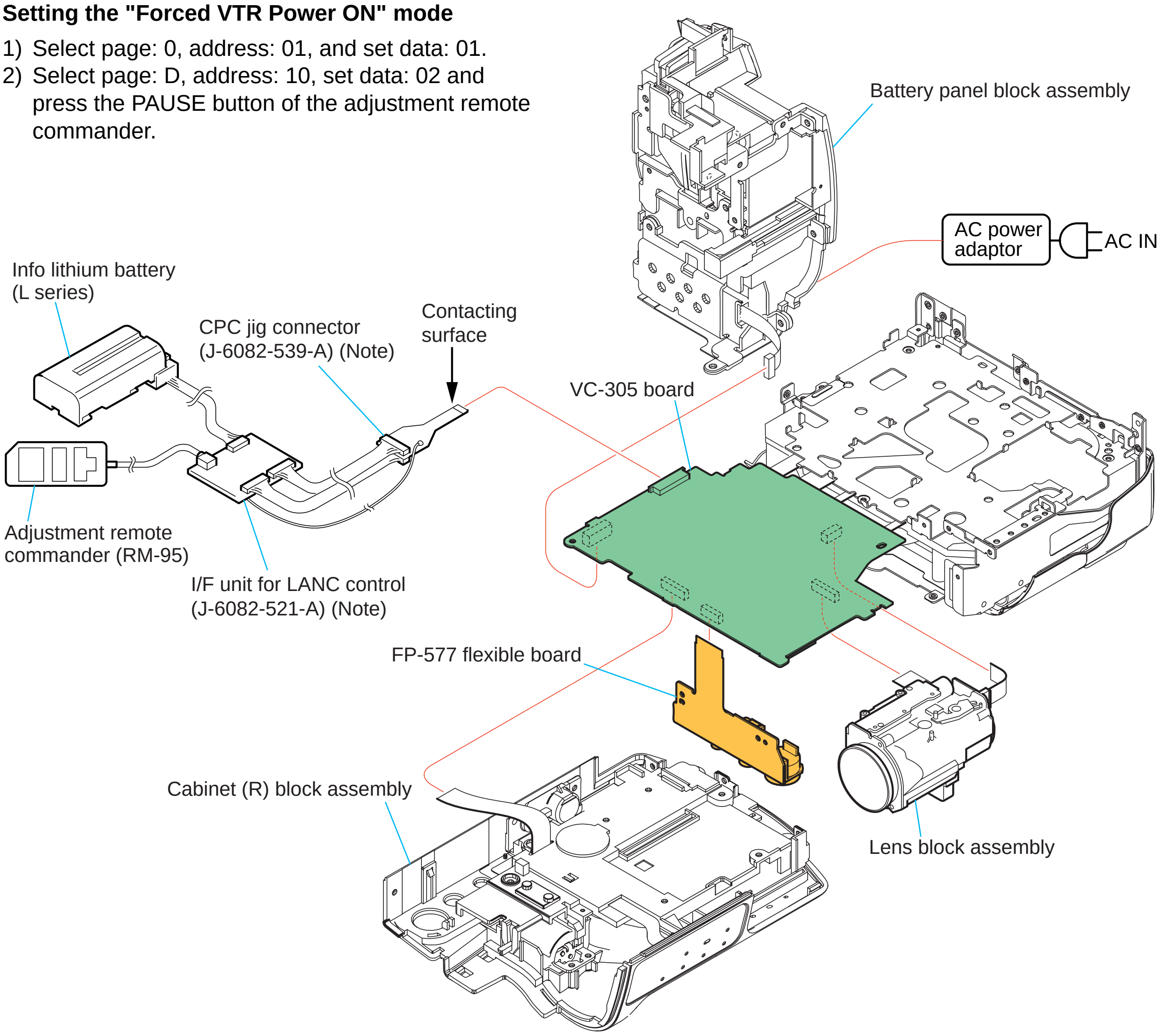
1) Select page: O, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01 and press the PAUSE button of the adjustment remote commander.

Setting the "Forced VTR Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02 and press the PAUSE button of the adjustment remote commander.

Exiting the "Forced Power ON" mode

1) Select page: O, address: 01, and set data: 01.
2) Select page: D, address: 10, data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page : 0, address: 01, and set data: 00.


Battery panel block assembly
AC power adaptor
AC IN
Info lithium battery (L series)
CPC jig connector (J-6082-539-A) (Note)
Contacting surface
VC-305 board
Adjustment remote commander (RM-95)
I/F unit for LANC control (J-6082-521-A) (Note)
FP-577 flexible board
Cabinet (R) block assembly
Lens block assembly

Note : The "Jig Modification" is necessary for connecting the adjusting remote commander to this set. Modify the jig by referring to page 1-3.

[SERVICE POSITION TO CHECK THE MECHANISM DECK]

Connection to Check the Mechanism deck

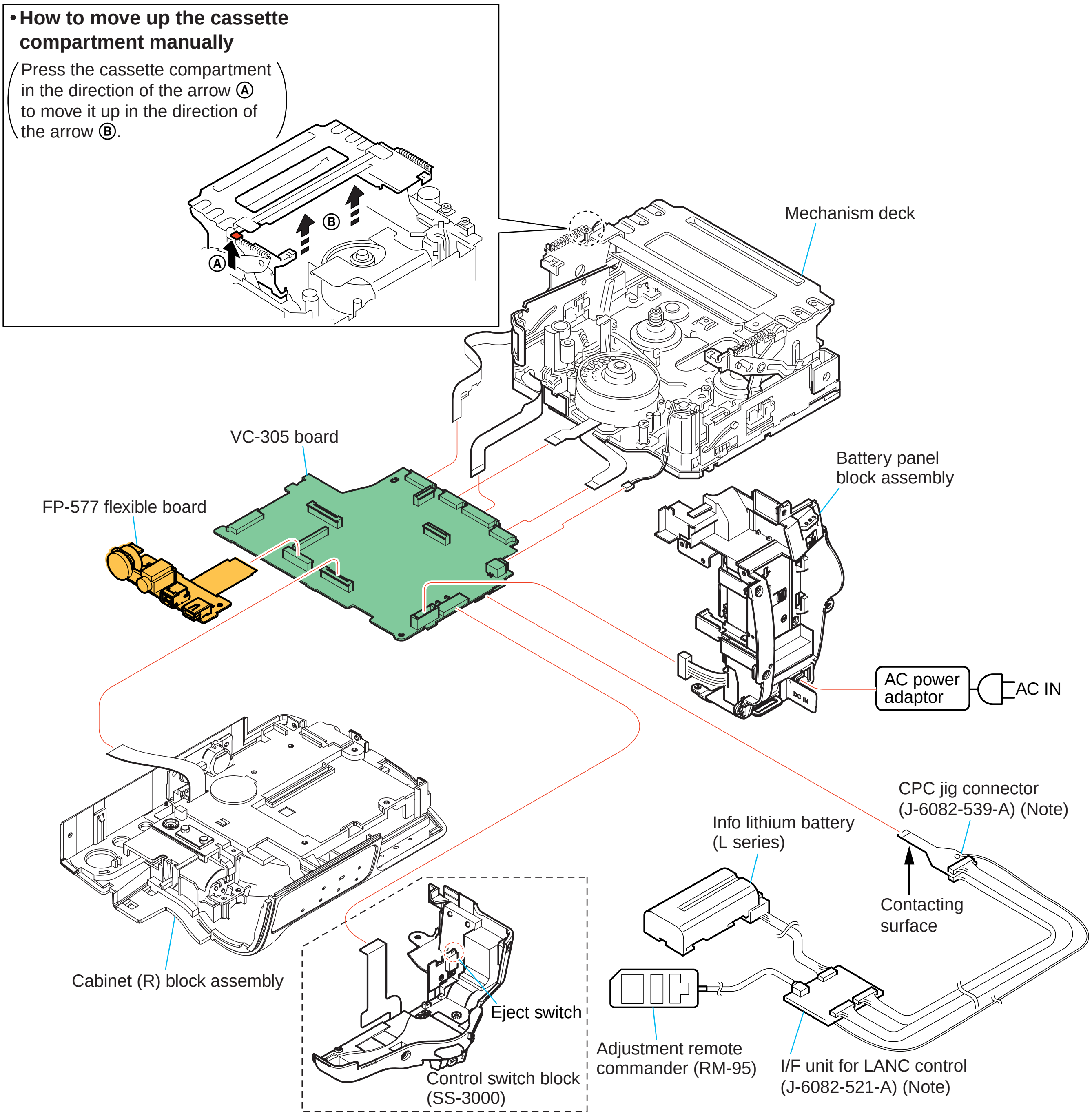
To check the mechanism deck, set the VTR to the "Forced VTR power ON" mode. (Or, connect the control switch block (SS-3000) to the CN1009 of VC-305 board and set the power switch to the "PLAYER" position.)
Operate the VTR function using the adjustment remote commander (with the HOLD switch set in the OFF position).

Setting the "Forced VTR Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02 and press the PAUSE button of the adjustment remote commander.

Exiting the "Forced VTR Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.



• How to move up the cassette compartment manually

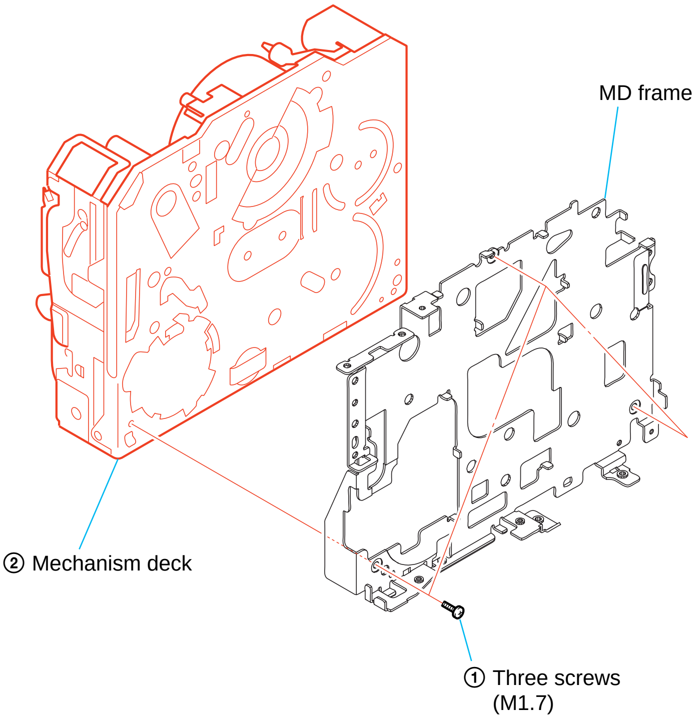
Press the cassette compartment in the direction of the arrow Ⓐ to move it up in the direction of the arrow Ⓑ.

Ⓐ
Ⓑ
Mechanism deck
VC-305 board
FP-577 flexible board
Battery panel block assembly
AC power adaptor
AC IN
CPC jig connector (J-6082-539-A) (Note)
Info lithium battery (L series)
Contacting surface
Cabinet (R) block assembly
Eject switch
Control switch block (SS-3000)
Adjustment remote commander (RM-95)
I/F unit for LANC control (J-6082-521-A) (Note)

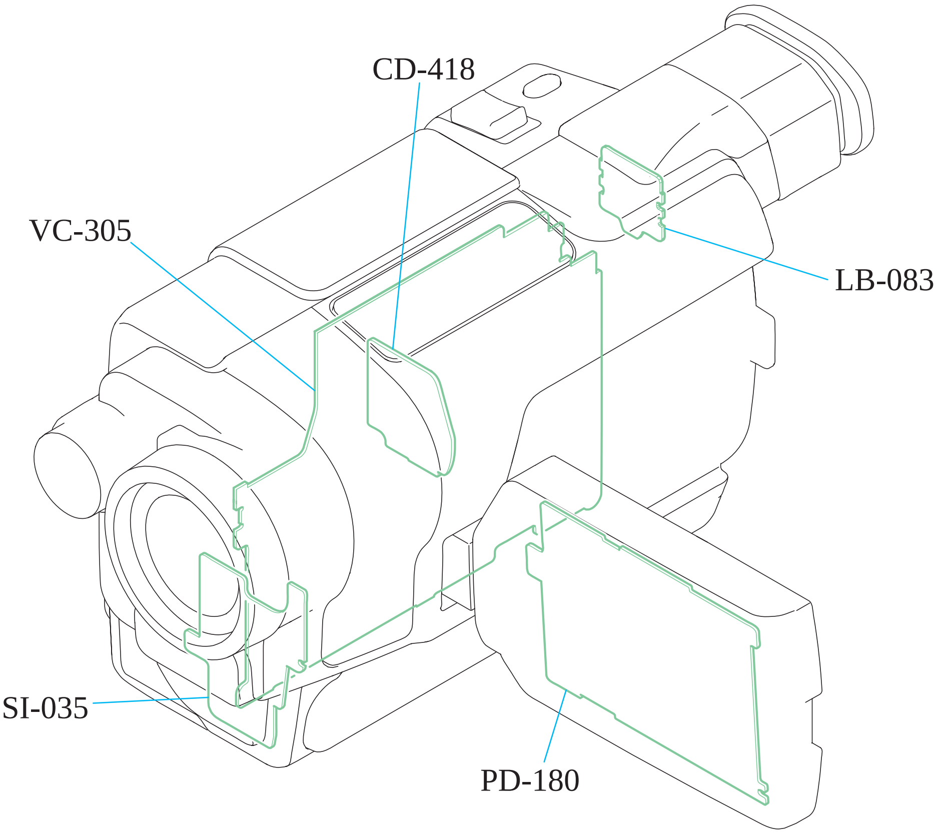
When exiting the "Forced VTR Power ON" mode, connect the control switch block (SS-3000) to the CN1009 of VC-305 board. Or, when ejecting the cassette, connect the control switch block (SS-3000) to the CN1009 of VC-305 board. and press the EJECT switch.

Note : The "Jig Modification" is necessary for connecting the adjusting remote commander to this set. Modify the jig by referring to page 1-3.

2-22. MECHANISM DECK BLOCK

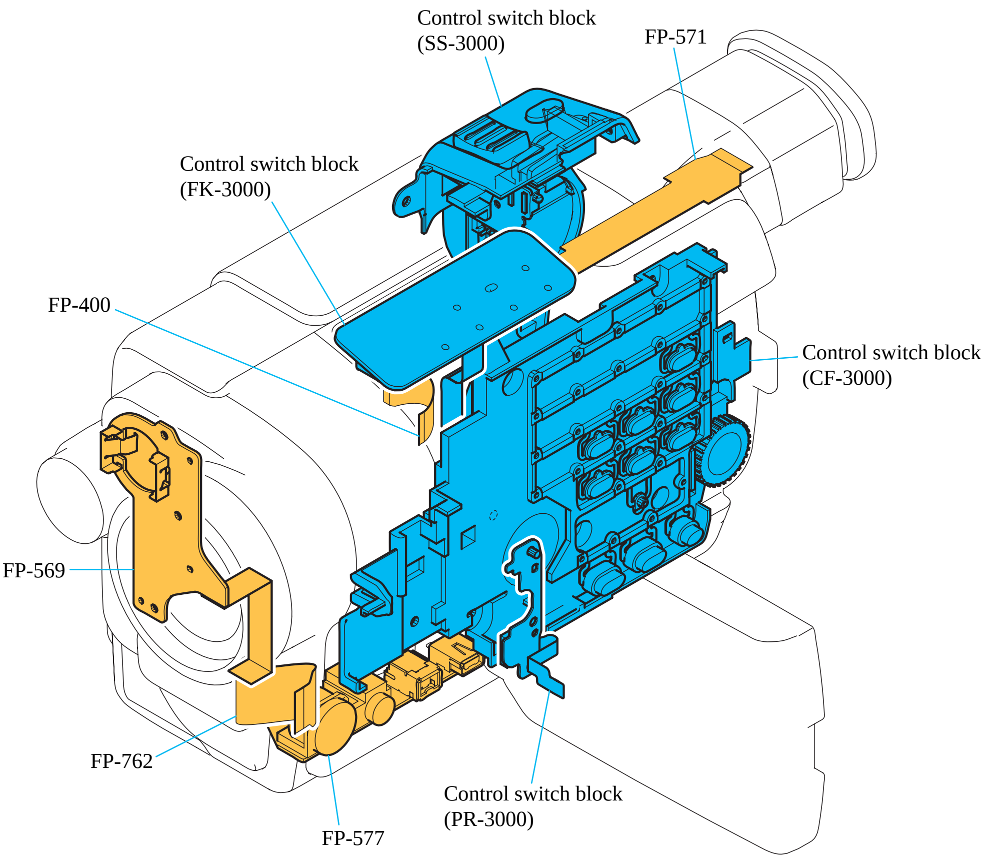

MD frame
② Mechanism deck
① Three screws
(M1.7)

2-23. CIRCUIT BOARDS LOCATION



Board Name	Function
CD-418	CCD IMAGER
LB-083	EVF BACKLIGHT
PD-180	RGB DRIVE, TIMING GENERATOR, BACKLIGHT DRIVE
SI-035	STEADYSHOT, MIC
VC-305	A/D CONVERTER, TIMING GENERATOR, VIDEO/AUDIO DSP, LENS CONTROL, LENS DRIVE, VIDEO OUT, DV SIGNAL PROCESS, REC/PB AMP, DV INTERFACE, USB/MODE CONTROL, HI CONTROL, CAMERA/MECHA CONTROL, SERVO, EVF DRIVE, AUDIO, MIC AMP, DC CONTROL

2-24. FLEXIBLE BOARDS LOCATION

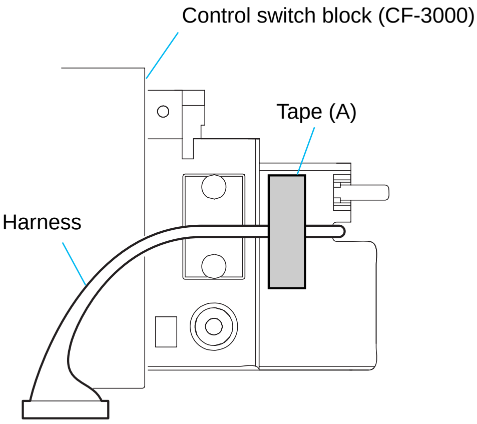

Control switch block
(SS-3000)
FP-571
Control switch block
(FK-3000)
FP-400
Control switch block
(CF-3000)
FP-569
FP-762
FP-577
Control switch block
(PR-3000)

2003.01.24 Update

HELP

Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

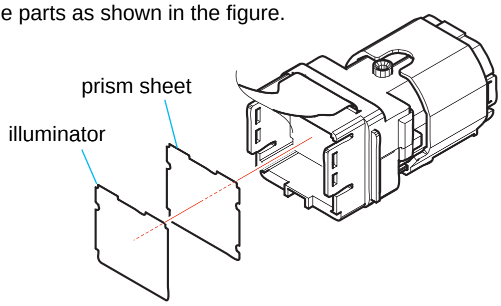
CABINET (R) BLOCK ASSEMBLY


Control switch block (CF-3000)
Tape (A)
Harness

When installing Control switch block (CF-3000),
set harness and tape (A) as shown in the figure.

PRISM SHEET AND ILLUMINATOR

When installing prism sheet and illuminator,
set these parts as shown in the figure.


prism sheet
illuminator

COVER

3. BLOCK DIAGRAMS

Link

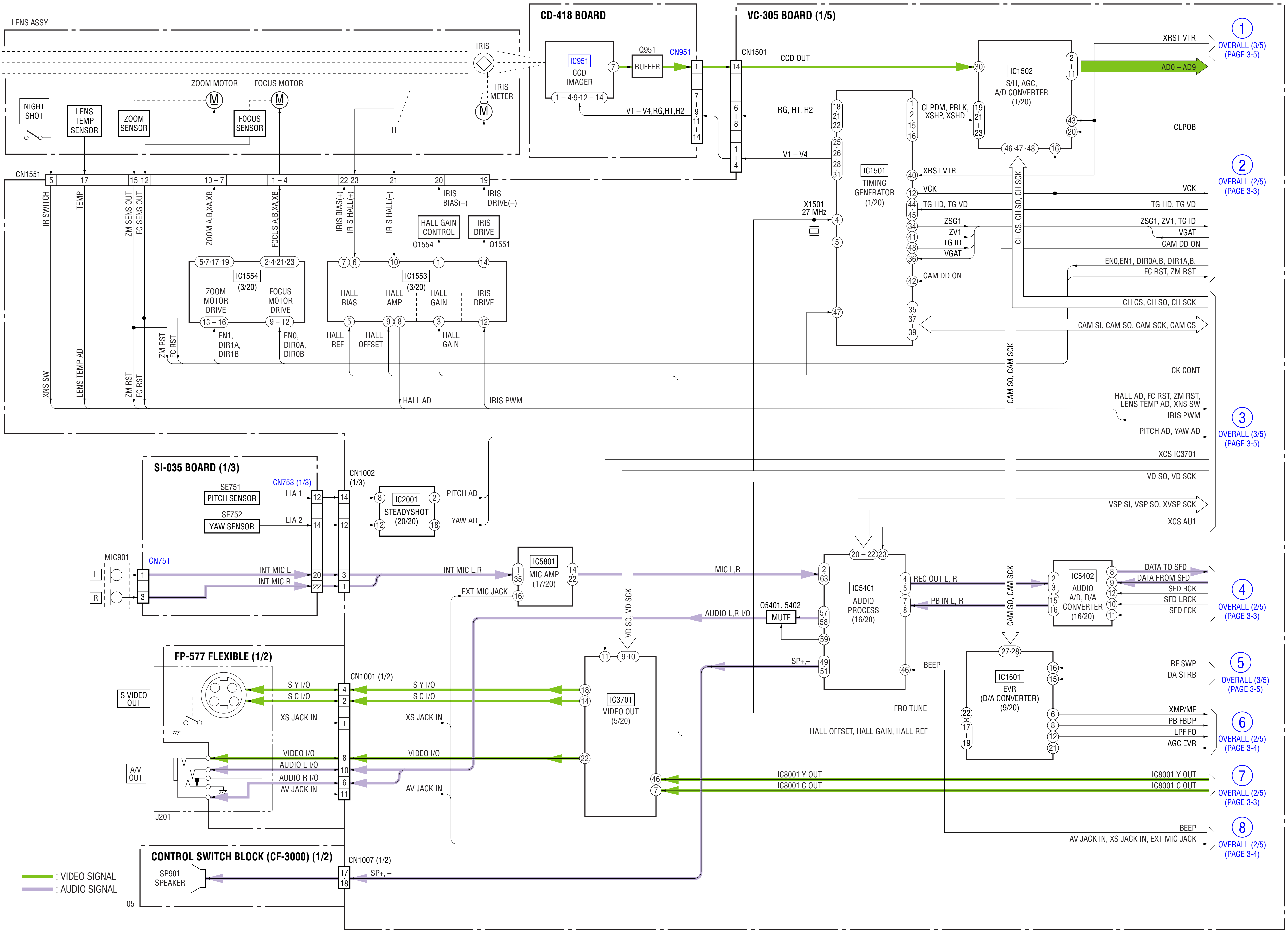
- OVERALL BLOCK DIAGRAM (1/5)
- OVERALL BLOCK DIAGRAM (2/5)
- OVERALL BLOCK DIAGRAM (3/5)
- OVERALL BLOCK DIAGRAM (4/5)
- OVERALL BLOCK DIAGRAM (5/5)
- POWER BLOCK DIAGRAM (1/3)
- POWER BLOCK DIAGRAM (2/3)
- POWER BLOCK DIAGRAM (3/3)

COVER

SECTION 3
BLOCK DIAGRAMS

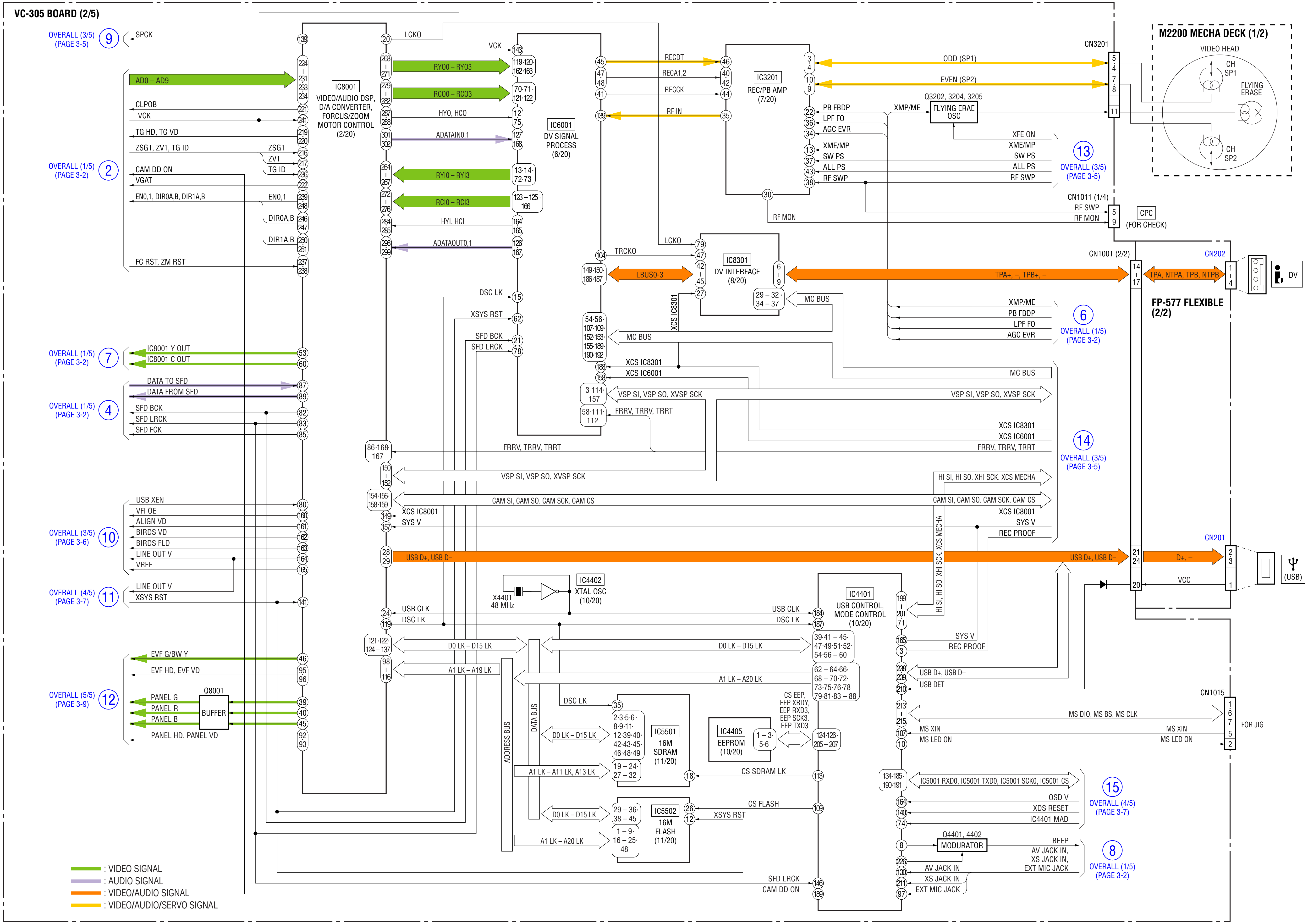
3-1. OVERALL BLOCK DIAGRAM (1/5)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.


LENS ASSY
IRIS
ZOOM MOTOR
FOCUS MOTOR
IRIS METER
NIGHT SHOT
LENS TEMP SENSOR
ZOOM SENSOR
FOCUS SENSOR
H
CN1551
IR SWITCH
TEMP
ZM SENS OUT
FC SENS OUT
ZOOM A,B,XA,XB
FOCUS A,B,XA,XB
IRIS BIAS(+)
IRIS HALL(+)
IRIS HALL(-)
IRIS BIAS(-)
IRIS DRIVE(-)
HALL GAIN CONTROL
Q1554
IRIS DRIVE
Q1551
IC1554 (3/20)
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
IC1553 (3/20)
HALL BIAS
HALL AMP
HALL GAIN
IRIS DRIVE
EN1, DIR1A, DIR1B
EN0, DIR0A, DIR0B
HALL REF
HALL OFFSET
HALL GAIN
ZM RST
FC RST
XNS SW
LENS TEMP AD
HALL AD
IRIS PWM
CD-418 BOARD
IC951
CCD IMAGER
Q951
BUFFER
CN951
V1 – V4,RG,H1,H2
VC-305 BOARD (1/5)
CN1501
CCD OUT
RG, H1, H2
V1 – V4
IC1502
S/H, AGC, A/D CONVERTER (1/20)
XRST VTR
AD0 – AD9
CLPOB
CLPDM, PBLK, XSHP, XSHD
IC1501
TIMING GENERATOR (1/20)
X1501 27 MHz
XRST VTR
VCK
TG HD, TG VD
ZSG1
ZV1
TG ID
VGAT
CAM DD ON
ZSG1, ZV1, TG ID
EN0,EN1, DIR0A,B, DIR1A,B, FC RST, ZM RST
CH CS, CH SO, CH SCK
CAM SI, CAM SO, CAM SCK, CAM CS
CK CONT
CAM SO, CAM SCK
HALL AD, FC RST, ZM RST, LENS TEMP AD, XNS SW
IRIS PWM
PITCH AD, YAW AD
XCS IC3701
VD SO, VD SCK
VSP SI, VSP SO, XVSP SCK
XCS AU1
SI-035 BOARD (1/3)
SE751
PITCH SENSOR
SE752
YAW SENSOR
CN753 (1/3)
LIA 1
LIA 2
CN1002 (1/3)
IC2001
STEADYSHOT (20/20)
PITCH AD
YAW AD
MIC901
CN751
INT MIC L
INT MIC R
INT MIC L,R
IC5801
MIC AMP (17/20)
EXT MIC JACK
MIC L,R
IC5401
AUDIO PROCESS (16/20)
REC OUT L, R
PB IN L, R
AUDIO L,R I/O
Q5401, 5402
MUTE
SP+,–
BEEP
IC5402
AUDIO A/D, D/A CONVERTER (16/20)
DATA TO SFD
DATA FROM SFD
SFD BCK
SFD LRCK
SFD FCK
IC1601
EVR (D/A CONVERTER) (9/20)
RF SWP
DA STRB
XMP/ME
PB FBDP
LPF FO
AGC EVR
FRQ TUNE
HALL OFFSET, HALL GAIN, HALL REF
FP-577 FLEXIBLE (1/2)
S VIDEO OUT
A/V OUT
J201
CN1001 (1/2)
S Y I/O
S C I/O
XS JACK IN
VIDEO I/O
AUDIO L I/O
AUDIO R I/O
AV JACK IN
IC3701
VIDEO OUT (5/20)
IC8001 Y OUT
IC8001 C OUT
AV JACK IN, XS JACK IN, EXT MIC JACK
CONTROL SWITCH BLOCK (CF-3000) (1/2)
SP901 SPEAKER
CN1007 (1/2)
SP+, –
1 OVERALL (3/5) (PAGE 3-5)
2 OVERALL (2/5) (PAGE 3-3)
3 OVERALL (3/5) (PAGE 3-5)
4 OVERALL (2/5) (PAGE 3-3)
5 OVERALL (3/5) (PAGE 3-5)
6 OVERALL (2/5) (PAGE 3-4)
7 OVERALL (2/5) (PAGE 3-3)
8 OVERALL (2/5) (PAGE 3-4)
🟩 : VIDEO SIGNAL
▨ : AUDIO SIGNAL
05

3-2. OVERALL BLOCK DIAGRAM (2/5)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.


VC-305 BOARD (2/5)
OVERALL (3/5) (PAGE 3-5) 9
SPCK
AD0 – AD9
CLPOB
VCK
TG HD, TG VD
ZSG1, ZV1, TG ID
ZSG1
ZV1
TG ID
OVERALL (1/5) (PAGE 3-2) 2
CAM DD ON
VGAT
EN0,1, DIR0A,B, DIR1A,B
EN0,1
DIR0A,B
DIR1A,B
FC RST, ZM RST
IC8001
VIDEO/AUDIO DSP, D/A CONVERTER, FORCUS/ZOOM MOTOR CONTROL (2/20)
LCKO
VCK
RY00 – RY03
RC00 – RC03
HY0, HC0
ADATAIN0,1
RYI0 – RYI3
RCI0 – RCI3
HYI, HCI
ADATAOUT0,1
IC6001
DV SIGNAL PROCESS (6/20)
RECDT
RECA1,2
RECCK
RF IN
IC3201
REC/PB AMP (7/20)
ODD (SP1)
EVEN (SP2)
CN3201
Q3202, 3204, 3205
XMP/ME
FLYING ERAE OSC
PB FBDP
LPF FO
AGC EVR
XME/MP
SW PS
ALL PS
RF SWP
XFE ON
XME/MP
SW PS
ALL PS
RF SWP
OVERALL (3/5) (PAGE 3-5) 13
RF MON
CN1011 (1/4)
RF SWP
RF MON
CPC
(FOR CHECK)
M2200 MECHA DECK (1/2)
VIDEO HEAD
CH SP1
FLYING ERASE
CH SP2
LCKO
TRCKO
IC8301
DV INTERFACE (8/20)
LBUS0-3
TPA+, –, TPB+, –
CN1001 (2/2)
CN202
TPA, NTPA, TPB, NTPB
DV
FP-577 FLEXIBLE (2/2)
MC BUS
XCS IC8301
DSC LK
XSYS RST
SFD BCK
SFD LRCK
XMP/ME
PB FBDP
LPF FO
AGC EVR
OVERALL (1/5) (PAGE 3-2) 6
MC BUS
XCS IC8301
XCS IC6001
MC BUS
VSP SI, VSP SO, XVSP SCK
FRRV, TRRV, TRRT
OVERALL (1/5) (PAGE 3-2) 7
IC8001 Y OUT
IC8001 C OUT
DATA TO SFD
DATA FROM SFD
OVERALL (1/5) (PAGE 3-2) 4
SFD BCK
SFD LRCK
SFD FCK
XCS IC8301
XCS IC6001
FRRV, TRRV, TRRT
OVERALL (3/5) (PAGE 3-5) 14
FRRV, TRRV, TRRT
VSP SI, VSP SO, XVSP SCK
HI SI, HI SO. XHI SCK. XCS MECHA
CAM SI, CAM SO. CAM SCK. CAM CS
XCS IC8001
SYS V
REC PROOF
HI SI, HI SO. XHI SCK. XCS MECHA
OVERALL (3/5) (PAGE 3-6) 10
USB XEN
VFI OE
ALIGN VD
BIRDS VD
BIRDS FLD
LINE OUT V
VREF
USB D+, USB D–
CN201
D+, –
VCC
(USB)
OVERALL (4/5) (PAGE 3-7) 11
LINE OUT V
XSYS RST
IC4402
XTAL OSC (10/20)
X4401 48 MHz
USB CLK
DSC LK
IC4401
USB CONTROL, MODE CONTROL (10/20)
D0 LK – D15 LK
A1 LK – A19 LK
A1 LK – A20 LK
SYS V
REC PROOF
USB D+, USB D–
USB DET
CN1015
MS DIO, MS BS, MS CLK
MS XIN
MS LED ON
FOR JIG
OVERALL (5/5) (PAGE 3-9) 12
EVF G/BW Y
EVF HD, EVF VD
Q8001
BUFFER
PANEL G
PANEL R
PANEL B
PANEL HD, PANEL VD
ADDRESS BUS
DATA BUS
DSC LK
IC5501
16M SDRAM (11/20)
IC4405
EEPROM (10/20)
CS EEP, EEP XRDY, EEP RXD3, EEP SCK3, EEP TXD3
A1 LK – A11 LK, A13 LK
CS SDRAM LK
IC5502
16M FLASH (11/20)
CS FLASH
XSYS RST
IC5001 RXD0, IC5001 TXD0, IC5001 SCK0, IC5001 CS
OSD V
XDS RESET
IC4401 MAD
OVERALL (4/5) (PAGE 3-7) 15
Q4401, 4402
MODURATOR
BEEP
AV JACK IN, XS JACK IN, EXT MIC JACK
OVERALL (1/5) (PAGE 3-2) 8
AV JACK IN
XS JACK IN
EXT MIC JACK
SFD LRCK
CAM DD ON

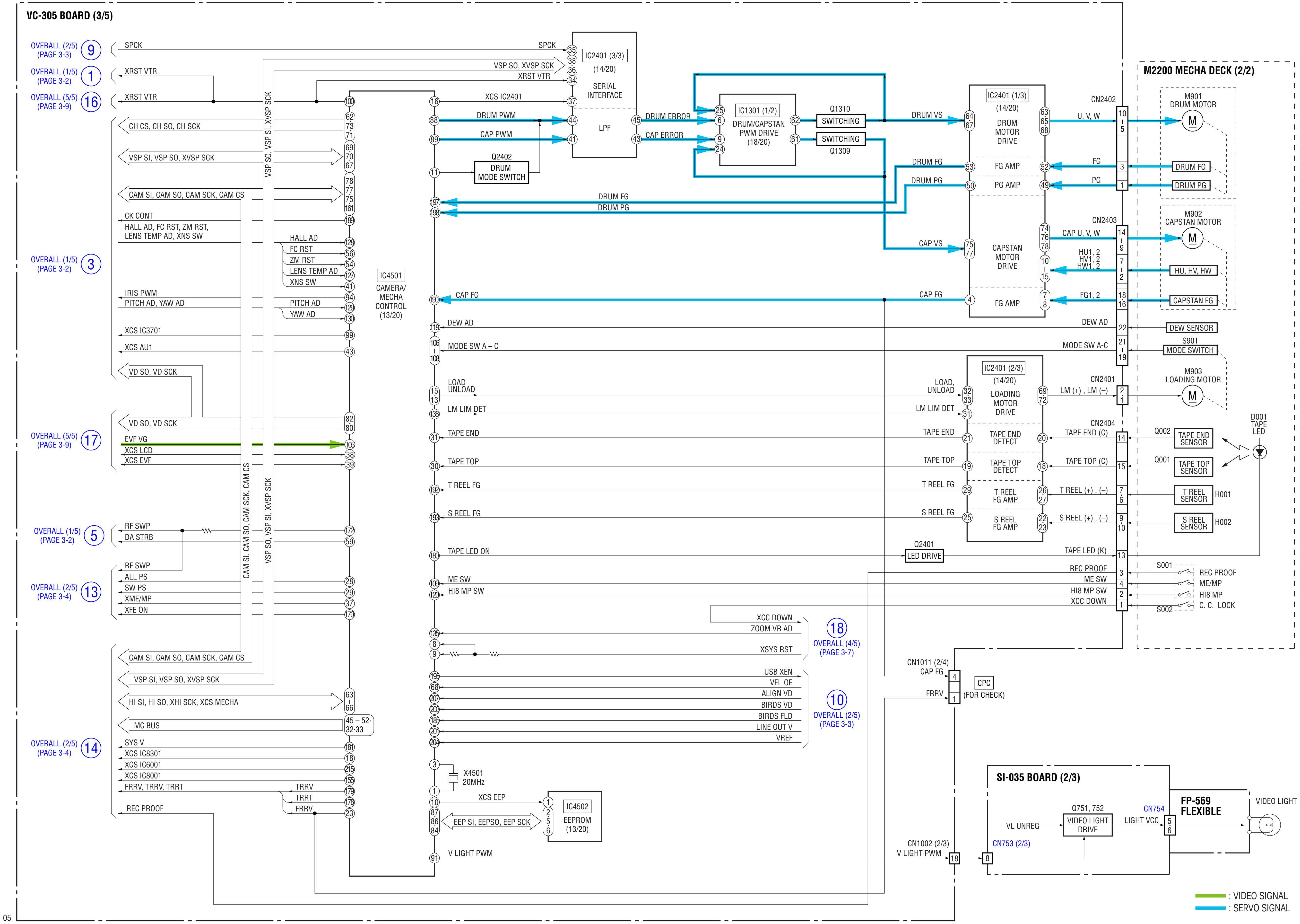
🟩 : VIDEO SIGNAL
🟪 : AUDIO SIGNAL
🟧 : VIDEO/AUDIO SIGNAL
🟨 : VIDEO/AUDIO/SERVO SIGNAL

COVER

3. BLOCK DIAGRAMS

3-3. OVERALL BLOCK DIAGRAM (3/5)

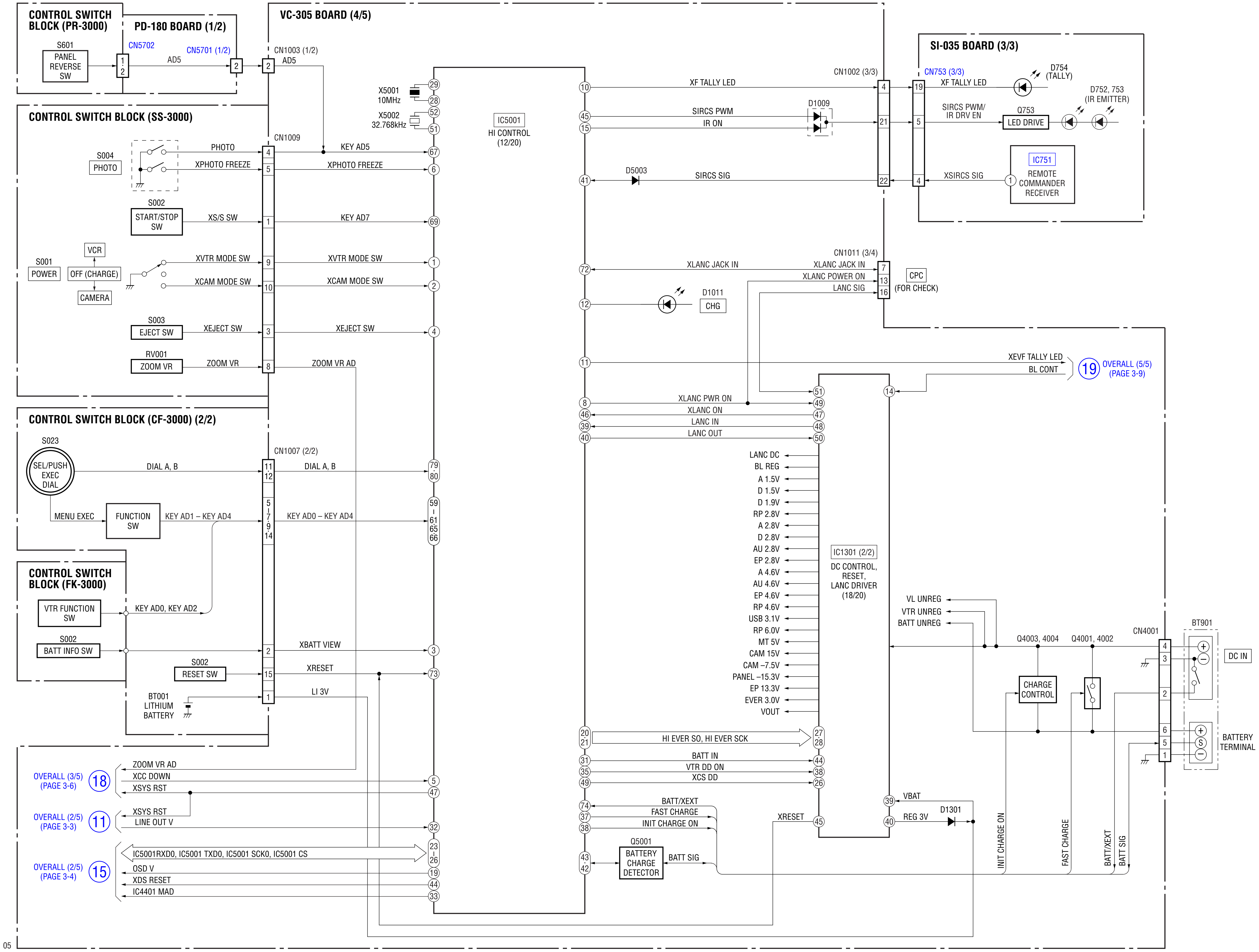
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.


VC-305 BOARD (3/5)
OVERALL (2/5) (PAGE 3-3) 9
OVERALL (1/5) (PAGE 3-2) 1
OVERALL (5/5) (PAGE 3-9) 16
OVERALL (1/5) (PAGE 3-2) 3
OVERALL (5/5) (PAGE 3-9) 17
OVERALL (1/5) (PAGE 3-2) 5
OVERALL (2/5) (PAGE 3-4) 13
OVERALL (2/5) (PAGE 3-4) 14
OVERALL (4/5) (PAGE 3-7) 18
OVERALL (2/5) (PAGE 3-3) 10
SPCK
XRST VTR
VSP SO, XVSP SCK
CH CS, CH SO, CH SCK
VSP SI, VSP SO, XVSP SCK
CAM SI, CAM SO, CAM SCK, CAM CS
CK CONT
HALL AD, FC RST, ZM RST, LENS TEMP AD, XNS SW
HALL AD
FC RST
ZM RST
LENS TEMP AD
XNS SW
IRIS PWM
PITCH AD, YAW AD
PITCH AD
YAW AD
XCS IC3701
XCS AU1
VD SO, VD SCK
EVF VG
XCS LCD
XCS EVF
RF SWP
DA STRB
ALL PS
SW PS
XME/MP
XFE ON
HI SI, HI SO, XHI SCK, XCS MECHA
MC BUS
SYS V
XCS IC8301
XCS IC6001
XCS IC8001
FRRV, TRRV, TRRT
TRRV
TRRT
FRRV
REC PROOF
IC4501
CAMERA/ MECHA CONTROL
(13/20)
IC2401 (3/3)
(14/20)
SERIAL INTERFACE
LPF
XCS IC2401
DRUM PWM
CAP PWM
Q2402
DRUM MODE SWITCH
DRUM ERROR
CAP ERROR
IC1301 (1/2)
DRUM/CAPSTAN PWM DRIVE
(18/20)
Q1310
SWITCHING
Q1309
DRUM VS
CAP VS
DRUM FG
DRUM PG
CAP FG
IC2401 (1/3)
(14/20)
DRUM MOTOR DRIVE
FG AMP
PG AMP
CAPSTAN MOTOR DRIVE
CN2402
U, V, W
FG
PG
CN2403
CAP U, V, W
HU1, 2 HV1, 2 HW1, 2
FG1, 2
DEW AD
MODE SW A – C
MODE SW A-C
IC2401 (2/3)
(14/20)
LOADING MOTOR DRIVE
LOAD, UNLOAD
CN2401
LM (+) , LM (–)
LM LIM DET
CN2404
TAPE END
TAPE END DETECT
TAPE END (C)
TAPE TOP
TAPE TOP DETECT
TAPE TOP (C)
T REEL FG
T REEL FG AMP
T REEL (+) , (–)
S REEL FG
S REEL FG AMP
S REEL (+) , (–)
TAPE LED ON
Q2401
LED DRIVE
TAPE LED (K)
REC PROOF
ME SW
HI8 MP SW
XCC DOWN
ZOOM VR AD
XSYS RST
USB XEN
VFI OE
ALIGN VD
BIRDS VD
BIRDS FLD
LINE OUT V
VREF
X4501 20MHz
XCS EEP
EEP SI, EEPSO, EEP SCK
IC4502
EEPROM
(13/20)
V LIGHT PWM
CN1011 (2/4)
CAP FG
FRRV
CPC (FOR CHECK)
CN1002 (2/3)
V LIGHT PWM
M2200 MECHA DECK (2/2)
M901 DRUM MOTOR
M
DRUM FG
DRUM PG
M902 CAPSTAN MOTOR
HU, HV, HW
CAPSTAN FG
DEW SENSOR
S901 MODE SWITCH
M903 LOADING MOTOR
D001 TAPE LED
Q002 TAPE END SENSOR
Q001 TAPE TOP SENSOR
T REEL SENSOR H001
S REEL SENSOR H002
S001
S002
REC PROOF
ME/MP
HI8 MP
C. C. LOCK
SI-035 BOARD (2/3)
VL UNREG
Q751, 752
VIDEO LIGHT DRIVE
CN754
LIGHT VCC
CN753 (2/3)
FP-569 FLEXIBLE
VIDEO LIGHT
05

🟩 : VIDEO SIGNAL
🟦 : SERVO SIGNAL

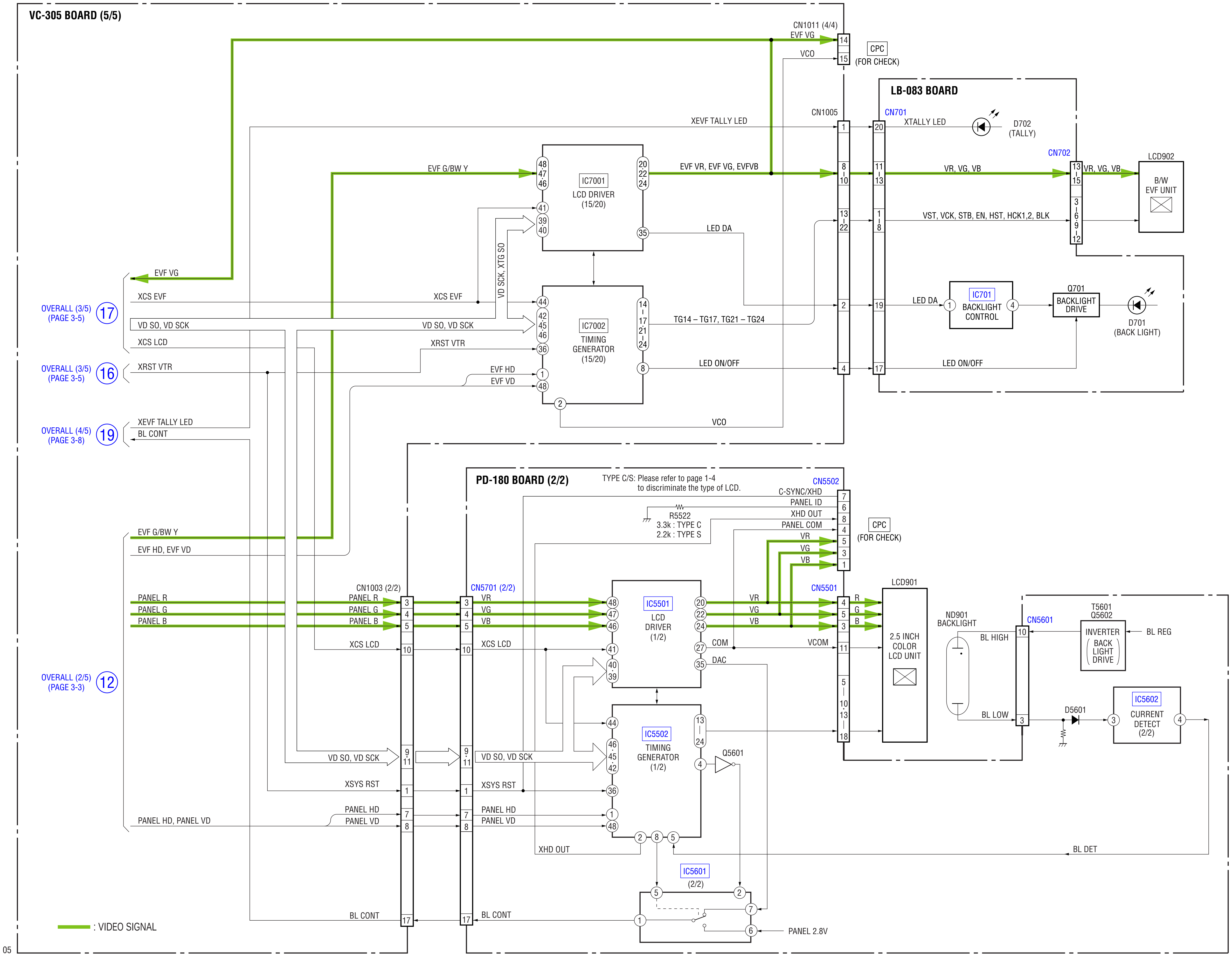
3-4. OVERALL BLOCK DIAGRAM (4/5)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.


CONTROL SWITCH BLOCK (PR-3000)
S601
PANEL REVERSE SW
PD-180 BOARD (1/2)
CN5702
CN5701 (1/2)
AD5
VC-305 BOARD (4/5)
CN1003 (1/2)
AD5
X5001 10MHz
X5002 32.768kHz
IC5001
HI CONTROL (12/20)
CONTROL SWITCH BLOCK (SS-3000)
CN1009
S004
PHOTO
PHOTO
XPHOTO FREEZE
KEY AD5
XPHOTO FREEZE
S002
START/STOP SW
XS/S SW
KEY AD7
S001
POWER
VCR
OFF (CHARGE)
CAMERA
XVTR MODE SW
XCAM MODE SW
S003
EJECT SW
XEJECT SW
RV001
ZOOM VR
ZOOM VR
ZOOM VR AD
CONTROL SWITCH BLOCK (CF-3000) (2/2)
S023
SEL/PUSH EXEC DIAL
DIAL A, B
CN1007 (2/2)
MENU EXEC
FUNCTION SW
KEY AD1 – KEY AD4
KEY AD0 – KEY AD4
CONTROL SWITCH BLOCK (FK-3000)
VTR FUNCTION SW
KEY AD0, KEY AD2
S002
BATT INFO SW
XBATT VIEW
S002
RESET SW
XRESET
BT001 LITHIUM BATTERY
LI 3V
OVERALL (3/5) (PAGE 3-6)
18
ZOOM VR AD
XCC DOWN
XSYS RST
OVERALL (2/5) (PAGE 3-3)
11
XSYS RST
LINE OUT V
OVERALL (2/5) (PAGE 3-4)
15
IC5001RXD0, IC5001 TXD0, IC5001 SCK0, IC5001 CS
OSD V
XDS RESET
IC4401 MAD
CN1002 (3/3)
XF TALLY LED
SIRCS PWM
IR ON
D1009
D5003
SIRCS SIG
SI-035 BOARD (3/3)
CN753 (3/3)
XF TALLY LED
D754 (TALLY)
D752, 753 (IR EMITTER)
SIRCS PWM/ IR DRV EN
Q753
LED DRIVE
IC751
REMOTE COMMANDER RECEIVER
XSIRCS SIG
CN1011 (3/4)
XLANC JACK IN
XLANC JACK IN
XLANC POWER ON
LANC SIG
CPC (FOR CHECK)
D1011
CHG
XEVF TALLY LED
BL CONT
19
OVERALL (5/5) (PAGE 3-9)
XLANC PWR ON
XLANC ON
LANC IN
LANC OUT
LANC DC
BL REG
A 1.5V
D 1.5V
D 1.9V
RP 2.8V
A 2.8V
D 2.8V
AU 2.8V
EP 2.8V
A 4.6V
AU 4.6V
EP 4.6V
RP 4.6V
USB 3.1V
RP 6.0V
MT 5V
CAM 15V
CAM –7.5V
PANEL –15.3V
EP 13.3V
EVER 3.0V
VOUT
IC1301 (2/2)
DC CONTROL, RESET, LANC DRIVER (18/20)
VL UNREG
VTR UNREG
BATT UNREG
Q4003, 4004
Q4001, 4002
CN4001
BT901
DC IN
CHARGE CONTROL
BATTERY TERMINAL
HI EVER SO, HI EVER SCK
BATT IN
VTR DD ON
XCS DD
BATT/XEXT
FAST CHARGE
INIT CHARGE ON
Q5001
BATTERY CHARGE DETECTOR
BATT SIG
XRESET
VBAT
REG 3V
D1301
INIT CHARGE ON
FAST CHARGE
BATT/XEXT
BATT SIG
05

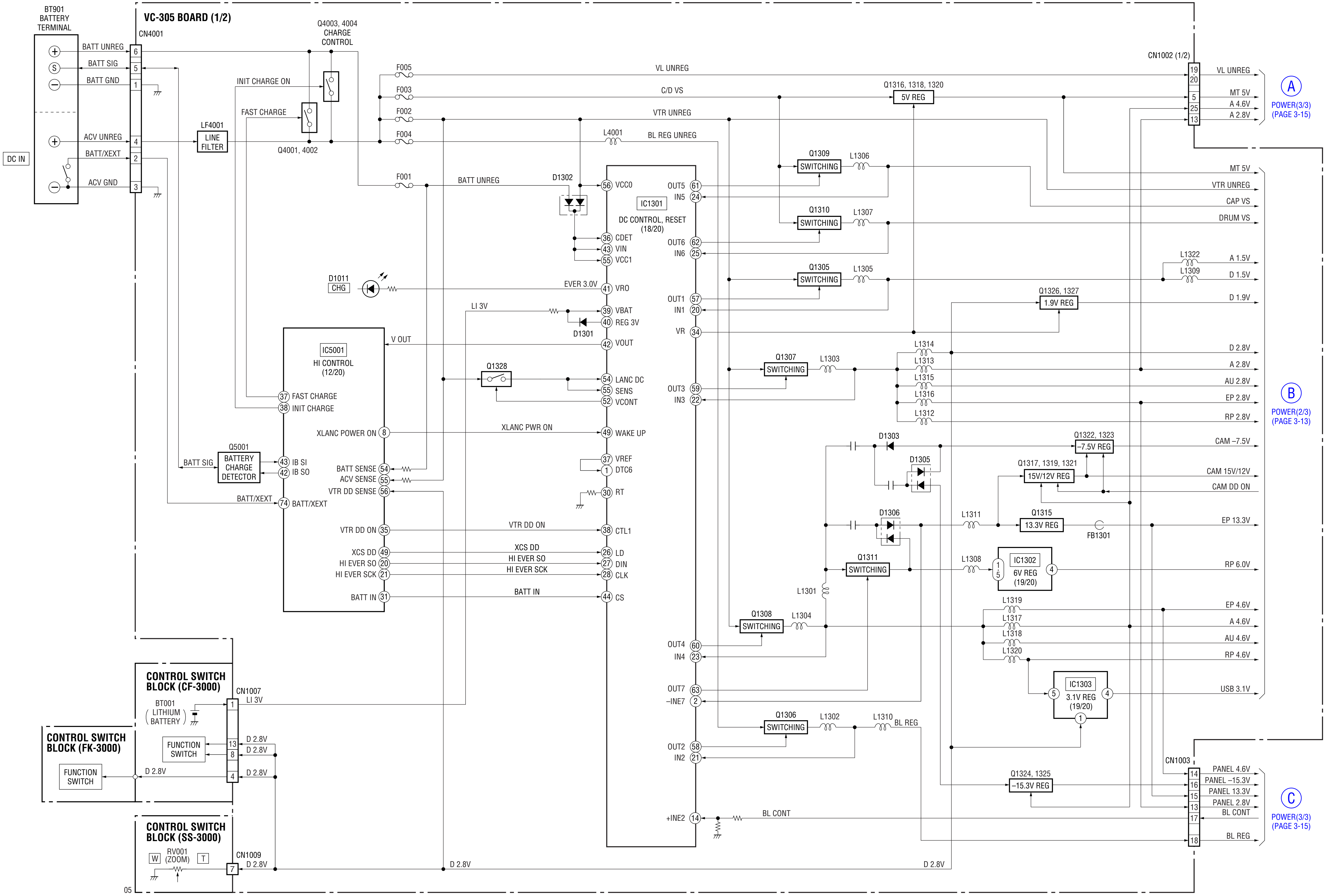
3-5. OVERALL BLOCK DIAGRAM (5/5)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.


VC-305 BOARD (5/5)
CN1011 (4/4)
EVF VG
VCO
14
15
CPC
(FOR CHECK)
LB-083 BOARD
CN701
XTALLY LED
D702
(TALLY)
CN1005
XEVF TALLY LED
CN702
LCD902
EVF G/BW Y
IC7001
LCD DRIVER
(15/20)
EVF VR, EVF VG, EVFVB
VR, VG, VB
B/W
EVF UNIT
VST, VCK, STB, EN, HST, HCK1,2, BLK
VD SCK, XTG SO
LED DA
EVF VG
XCS EVF
IC7002
TIMING
GENERATOR
(15/20)
TG14 – TG17, TG21 – TG24
IC701
BACKLIGHT
CONTROL
Q701
BACKLIGHT
DRIVE
D701
(BACK LIGHT)
OVERALL (3/5)
(PAGE 3-5)
17
VD SO, VD SCK
XCS LCD
XRST VTR
OVERALL (3/5)
(PAGE 3-5)
16
EVF HD
EVF VD
LED ON/OFF
OVERALL (4/5)
(PAGE 3-8)
19
XEVF TALLY LED
BL CONT
VCO
PD-180 BOARD (2/2)
TYPE C/S: Please refer to page 1-4
to discriminate the type of LCD.
CN5502
C-SYNC/XHD
PANEL ID
R5522
3.3k : TYPE C
2.2k : TYPE S
XHD OUT
PANEL COM
VR
VG
VB
CPC
(FOR CHECK)
EVF G/BW Y
EVF HD, EVF VD
CN1003 (2/2)
CN5701 (2/2)
PANEL R
PANEL G
PANEL B
VR
VG
VB
IC5501
LCD
DRIVER
(1/2)
CN5501
LCD901
R
G
B
2.5 INCH
COLOR
LCD UNIT
ND901
BACKLIGHT
CN5601
T5601
Q5602
INVERTER
BACK
LIGHT
DRIVE
BL REG
BL HIGH
BL LOW
XCS LCD
COM
DAC
VCOM
OVERALL (2/5)
(PAGE 3-3)
12
IC5502
TIMING
GENERATOR
(1/2)
Q5601
D5601
IC5602
CURRENT
DETECT
(2/2)
VD SO, VD SCK
XSYS RST
PANEL HD
PANEL VD
PANEL HD, PANEL VD
XHD OUT
BL DET
IC5601
(2/2)
BL CONT
PANEL 2.8V
: VIDEO SIGNAL
05

3-6. POWER BLOCK DIAGRAM (1/3)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.

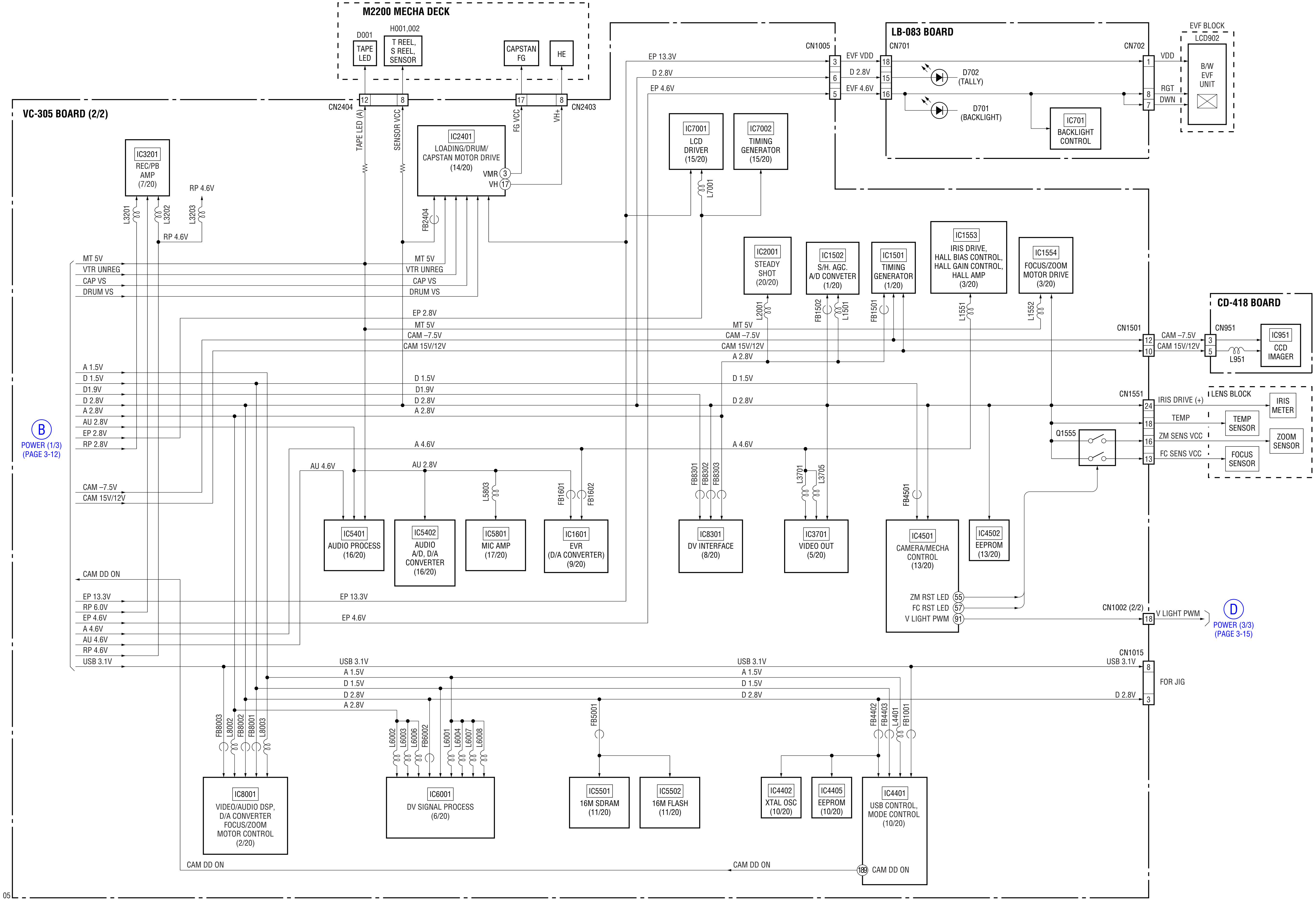

BT901
BATTERY
TERMINAL
BATT UNREG
BATT SIG
BATT GND
ACV UNREG
BATT/XEXT
ACV GND
DC IN
VC-305 BOARD (1/2)
CN4001
LF4001
LINE
FILTER
INIT CHARGE ON
FAST CHARGE
Q4003, 4004
CHARGE
CONTROL
Q4001, 4002
F005
F003
F002
F004
F001
VL UNREG
C/D VS
VTR UNREG
BL REG UNREG
L4001
BATT UNREG
D1302
IC1301
DC CONTROL, RESET
(18/20)
VCC0
CDET
VIN
VCC1
VRO
VBAT
REG 3V
VOUT
LANC DC
SENS
VCONT
WAKE UP
VREF
DTC6
RT
CTL1
LD
DIN
CLK
CS
OUT5
IN5
OUT6
IN6
OUT1
IN1
VR
OUT3
IN3
OUT4
IN4
OUT7
–INE7
OUT2
IN2
+INE2
D1011
CHG
EVER 3.0V
LI 3V
D1301
V OUT
IC5001
HI CONTROL
(12/20)
Q1328
FAST CHARGE
INIT CHARGE
XLANC POWER ON
XLANC PWR ON
Q5001
BATTERY
CHARGE
DETECTOR
BATT SIG
IB SI
IB SO
BATT SENSE
ACV SENSE
VTR DD SENSE
BATT/XEXT
VTR DD ON
XCS DD
HI EVER SO
HI EVER SCK
BATT IN
CN1002 (1/2)
Q1316, 1318, 1320
5V REG
Q1309
SWITCHING
L1306
Q1310
SWITCHING
L1307
Q1305
SWITCHING
L1305
L1322
L1309
Q1326, 1327
1.9V REG
L1314
L1313
L1315
L1316
L1312
Q1307
SWITCHING
L1303
D1303
D1305
Q1322, 1323
–7.5V REG
Q1317, 1319, 1321
15V/12V REG
D1306
L1311
Q1315
13.3V REG
FB1301
Q1311
SWITCHING
L1308
IC1302
6V REG
(19/20)
L1301
L1319
L1317
L1318
L1320
Q1308
SWITCHING
L1304
IC1303
3.1V REG
(19/20)
Q1306
SWITCHING
L1302
L1310
BL REG
Q1324, 1325
–15.3V REG
BL CONT
CN1003
VL UNREG
MT 5V
A 4.6V
A 2.8V
A
POWER(3/3)
(PAGE 3-15)
MT 5V
VTR UNREG
CAP VS
DRUM VS
A 1.5V
D 1.5V
D 1.9V
D 2.8V
A 2.8V
AU 2.8V
EP 2.8V
RP 2.8V
B
POWER(2/3)
(PAGE 3-13)
CAM –7.5V
CAM 15V/12V
CAM DD ON
EP 13.3V
RP 6.0V
EP 4.6V
A 4.6V
AU 4.6V
RP 4.6V
USB 3.1V
PANEL 4.6V
PANEL –15.3V
PANEL 13.3V
PANEL 2.8V
BL CONT
BL REG
C
POWER(3/3)
(PAGE 3-15)
CONTROL SWITCH
BLOCK (CF-3000)
BT001
LITHIUM
BATTERY
CN1007
LI 3V
CONTROL SWITCH
BLOCK (FK-3000)
FUNCTION
SWITCH
FUNCTION
SWITCH
D 2.8V
CONTROL SWITCH
BLOCK (SS-3000)
RV001
(ZOOM)
W
T
CN1009
D 2.8V
05

COVER

3. BLOCK DIAGRAMS

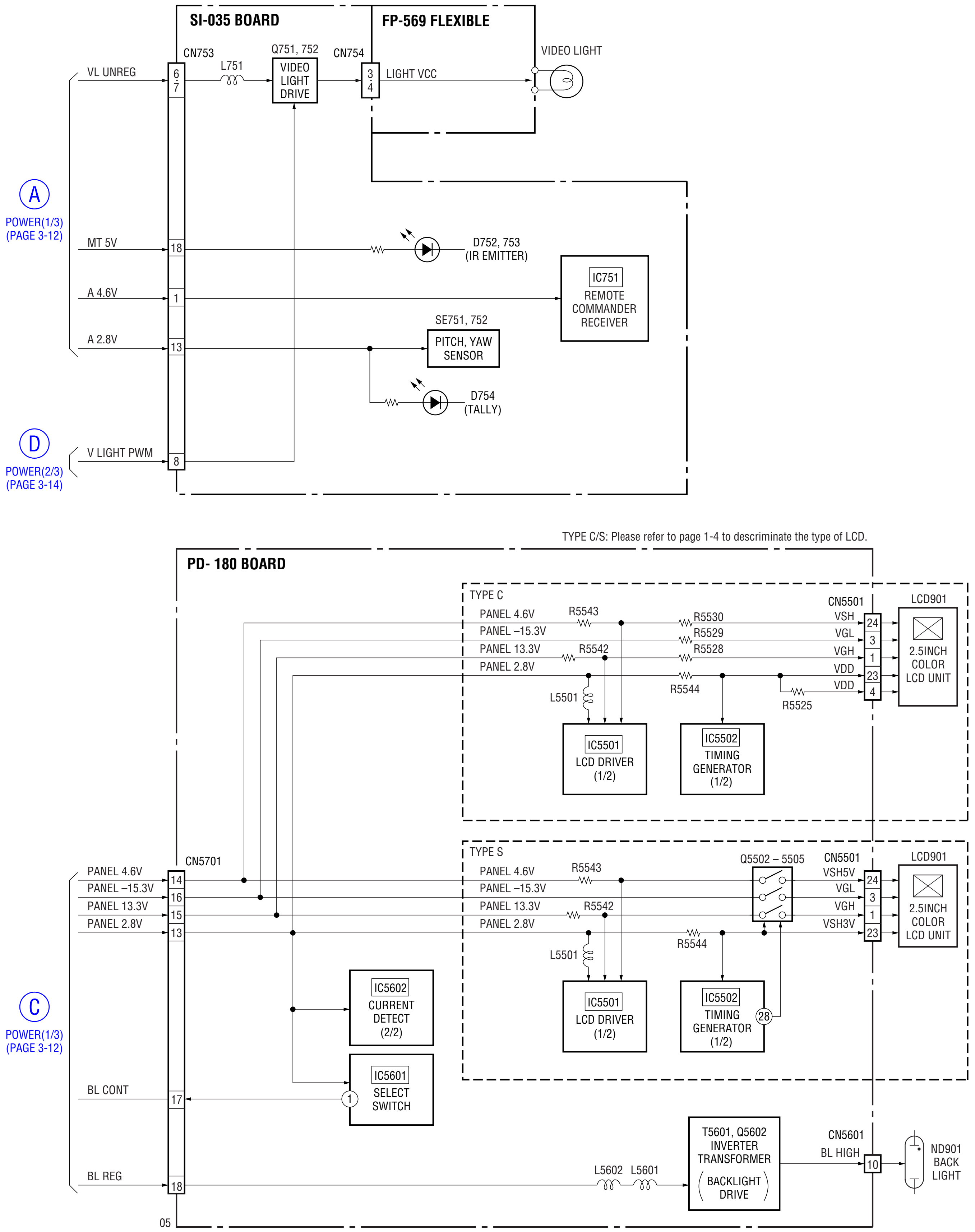
3-7. POWER BLOCK DIAGRAM (2/3)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.


M2200 MECHA DECK
D001
TAPE LED
H001,002
T REEL, S REEL, SENSOR
CAPSTAN FG
HE
CN2404
CN2403
TAPE LED (A)
SENSOR VCC
FG VCC
VH+
VC-305 BOARD (2/2)
IC3201 REC/PB AMP (7/20)
RP 4.6V
L3201
L3202
L3203
IC2401 LOADING/DRUM/ CAPSTAN MOTOR DRIVE (14/20)
VMR 3
VH 17
FB2404
IC7001 LCD DRIVER (15/20)
IC7002 TIMING GENERATOR (15/20)
L7001
EP 13.3V
D 2.8V
EP 4.6V
CN1005
EVF VDD
EVF 4.6V
LB-083 BOARD
CN701
D702 (TALLY)
D701 (BACKLIGHT)
IC701 BACKLIGHT CONTROL
CN702
VDD
RGT
DWN
EVF BLOCK
LCD902
B/W EVF UNIT
MT 5V
VTR UNREG
CAP VS
DRUM VS
EP 2.8V
CAM −7.5V
CAM 15V/12V
A 2.8V
IC2001 STEADY SHOT (20/20)
IC1502 S/H, AGC, A/D CONVETER (1/20)
IC1501 TIMING GENERATOR (1/20)
IC1553 IRIS DRIVE, HALL BIAS CONTROL, HALL GAIN CONTROL, HALL AMP (3/20)
IC1554 FOCUS/ZOOM MOTOR DRIVE (3/20)
L2001
FB1502
L1501
FB1501
L1551
L1552
CN1501
CD-418 BOARD
CN951
IC951 CCD IMAGER
L951
A 1.5V
D 1.5V
D1.9V
AU 2.8V
RP 2.8V
B
POWER (1/3) (PAGE 3-12)
CN1551
IRIS DRIVE (+)
TEMP
ZM SENS VCC
FC SENS VCC
LENS BLOCK
IRIS METER
TEMP SENSOR
ZOOM SENSOR
FOCUS SENSOR
Q1555
A 4.6V
AU 4.6V
L5803
FB1601
FB1602
FB8301
FB8302
FB8303
L3701
L3705
FB4501
IC5401 AUDIO PROCESS (16/20)
IC5402 AUDIO A/D, D/A CONVERTER (16/20)
IC5801 MIC AMP (17/20)
IC1601 EVR (D/A CONVERTER) (9/20)
IC8301 DV INTERFACE (8/20)
IC3701 VIDEO OUT (5/20)
IC4501 CAMERA/MECHA CONTROL (13/20)
ZM RST LED 55
FC RST LED 57
V LIGHT PWM 91
IC4502 EEPROM (13/20)
CN1002 (2/2)
V LIGHT PWM
D
POWER (3/3) (PAGE 3-15)
CAM DD ON
EP 13.3V
RP 6.0V
EP 4.6V
A 4.6V
AU 4.6V
RP 4.6V
USB 3.1V
CN1015
FOR JIG
FB8003
L8002
FB8002
FB8001
L8003
L6002
L6003
L6006
FB6002
L6001
L6004
L6007
L6008
FB5001
FB4402
FB4403
L4401
FB1001
IC8001 VIDEO/AUDIO DSP, D/A CONVERTER FOCUS/ZOOM MOTOR CONTROL (2/20)
IC6001 DV SIGNAL PROCESS (6/20)
IC5501 16M SDRAM (11/20)
IC5502 16M FLASH (11/20)
IC4402 XTAL OSC (10/20)
IC4405 EEPROM (10/20)
IC4401 USB CONTROL, MODE CONTROL (10/20)
189 CAM DD ON
05

3-9. POWER BLOCK DIAGRAM (3/3)

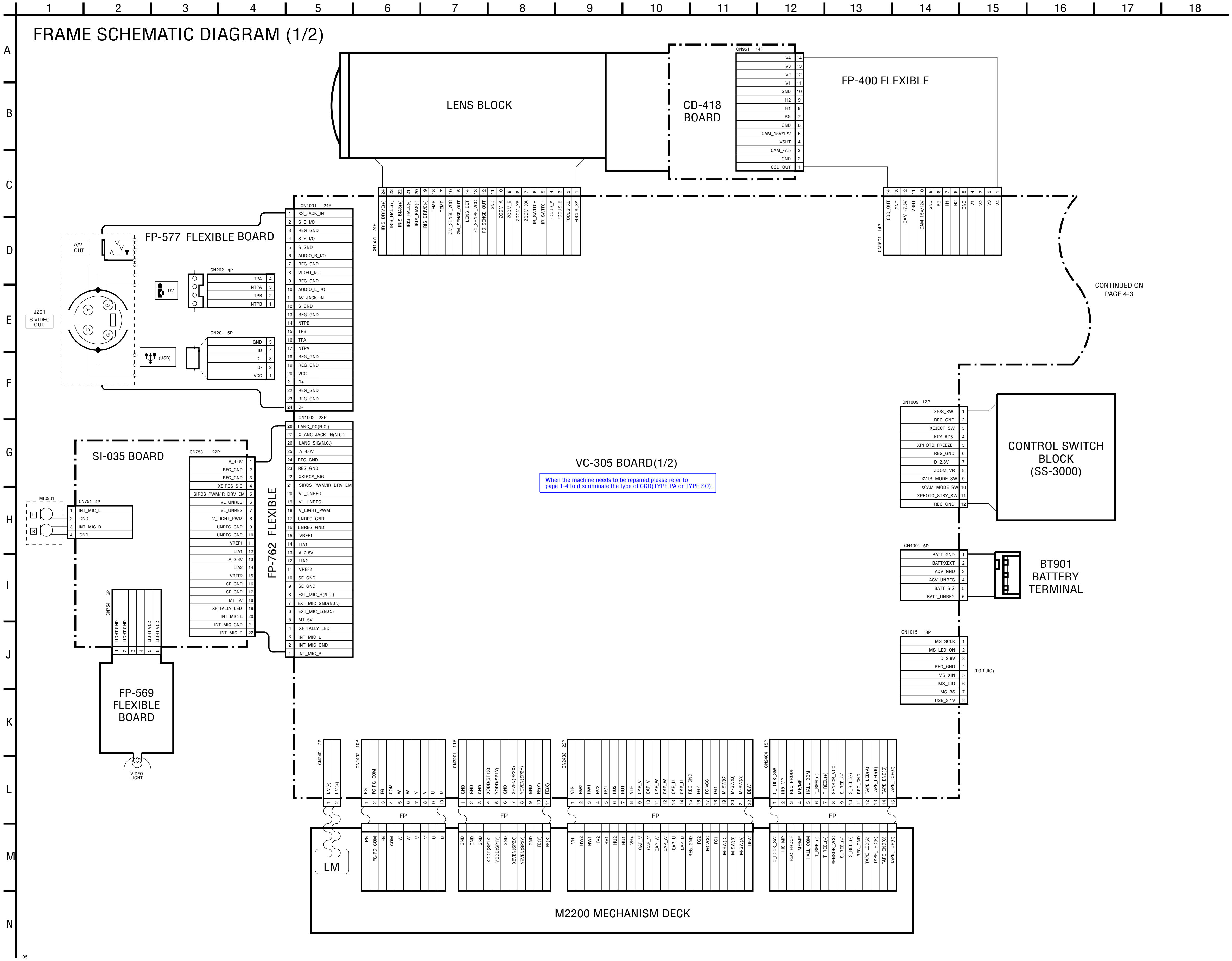
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.


SI-035 BOARD
FP-569 FLEXIBLE
CN753
L751
Q751, 752
VIDEO LIGHT DRIVE
CN754
LIGHT VCC
VIDEO LIGHT
VL UNREG
6
7
3
4
A
POWER(1/3)
(PAGE 3-12)
MT 5V
18
D752, 753
(IR EMITTER)
IC751
REMOTE COMMANDER RECEIVER
A 4.6V
1
A 2.8V
13
SE751, 752
PITCH, YAW SENSOR
D754
(TALLY)
D
POWER(2/3)
(PAGE 3-14)
V LIGHT PWM
8
TYPE C/S: Please refer to page 1-4 to descriminate the type of LCD.
PD- 180 BOARD
TYPE C
PANEL 4.6V
PANEL –15.3V
PANEL 13.3V
PANEL 2.8V
R5543
R5542
R5530
R5529
R5528
R5544
R5525
L5501
CN5501
VSH
VGL
VGH
VDD
VDD
24
3
1
23
4
LCD901
2.5INCH COLOR LCD UNIT
IC5501
LCD DRIVER
(1/2)
IC5502
TIMING GENERATOR
(1/2)
TYPE S
PANEL 4.6V
PANEL –15.3V
PANEL 13.3V
PANEL 2.8V
R5543
R5542
R5544
L5501
Q5502 – 5505
CN5501
VSH5V
VGL
VGH
VSH3V
24
3
1
23
LCD901
2.5INCH COLOR LCD UNIT
IC5501
LCD DRIVER
(1/2)
IC5502
TIMING GENERATOR
(1/2)
28
CN5701
PANEL 4.6V
PANEL –15.3V
PANEL 13.3V
PANEL 2.8V
14
16
15
13
C
POWER(1/3)
(PAGE 3-12)
IC5602
CURRENT DETECT
(2/2)
IC5601
SELECT SWITCH
1
BL CONT
17
BL REG
18
L5602
L5601
T5601, Q5602
INVERTER TRANSFORMER
(BACKLIGHT DRIVE)
CN5601
BL HIGH
10
ND901
BACK LIGHT
05

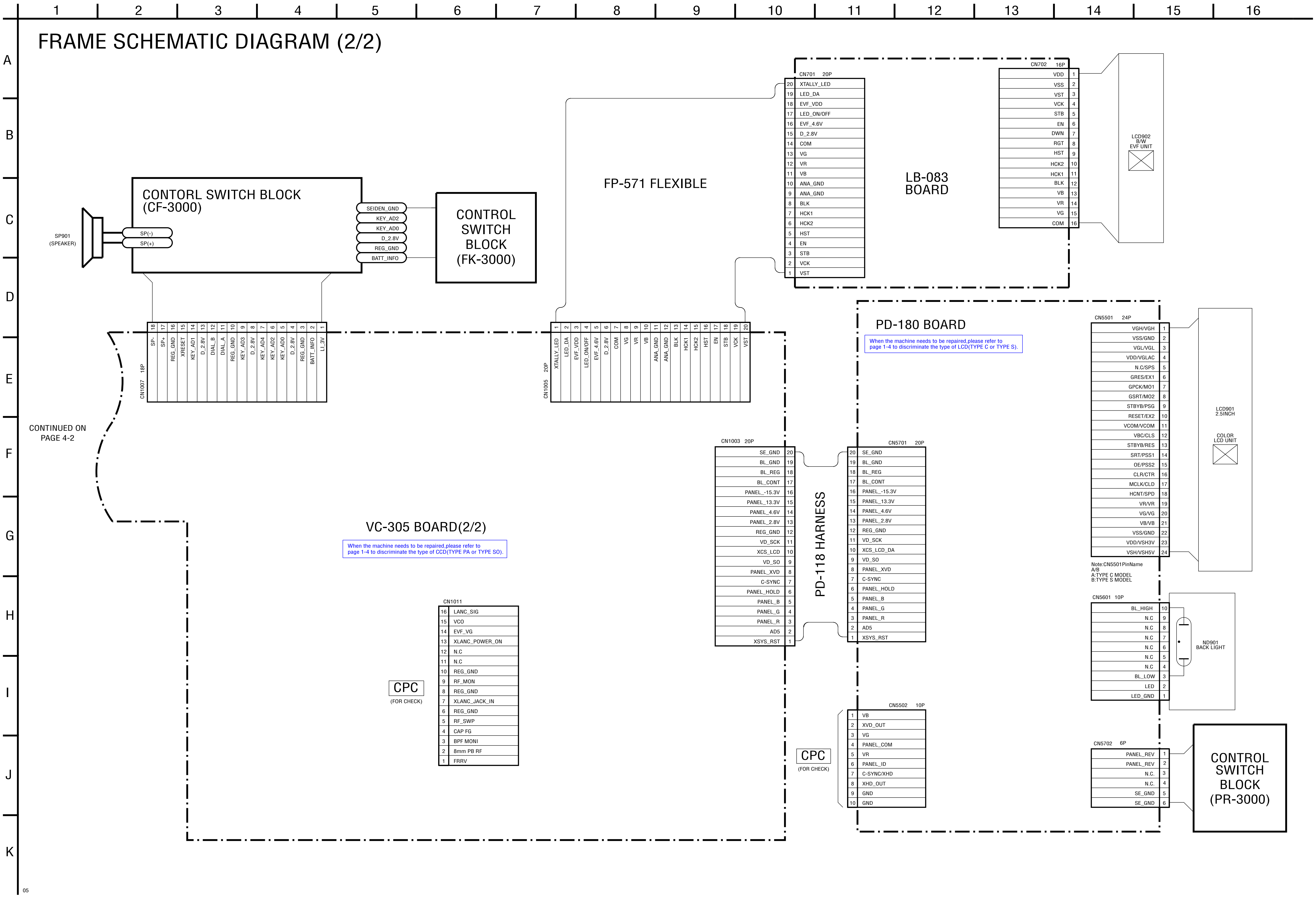
COVER
4-2. SCHEMATIC DIAGRAMS
4-3. PRINTED WIRING BOARDS

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAMS


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
J
K
L
M
N
FRAME SCHEMATIC DIAGRAM (1/2)
LENS BLOCK
CD-418 BOARD
CN951 14P
V4 14
V3 13
V2 12
V1 11
GND 10
H2 9
H1 8
RG 7
GND 6
CAM_15V/12V 5
VSHT 4
CAM_-7.5 3
GND 2
CCD_OUT 1
FP-400 FLEXIBLE
CN1551 24P
24 IRIS_DRIVE(+)
23 IRIS_HALL(+)
22 IRIS_BIAS(+)
21 IRIS_HALL(-)
20 IRIS_BIAS(-)
19 IRIS_DRIVE(-)
18 TEMP
17 TEMP
16 ZM_SENSE_VCC
15 ZM_SENSE_OUT
14 LENS_DET
13 FC_SENSE_VCC
12 FC_SENSE_OUT
11 GND
10 ZOOM_A
9 ZOOM_B
8 ZOOM_XB
7 ZOOM_XA
6 IR_SWITCH
5 IR_SWITCH
4 FOCUS_A
3 FOCUS_B
2 FOCUS_XB
1 FOCUS_XA
CN1501 14P
14 CCD_OUT
13 GND
12 CAM_-7.5V
11 VSHT
10 CAM_15V/12V
9 GND
8 RG
7 H1
6 H2
5 GND
4 V1
3 V2
2 V3
1 V4
CONTINUED ON PAGE 4-3
FP-577 FLEXIBLE BOARD
A/V OUT
J201
S VIDEO OUT
Y
C
G
G
DV
(USB)
CN202 4P
TPA 4
NTPA 3
TPB 2
NTPB 1
CN201 5P
GND 5
ID 4
D+ 3
D- 2
VCC 1
CN1001 24P
1 XS_JACK_IN
2 S_C_I/O
3 REG_GND
4 S_Y_I/O
5 S_GND
6 AUDIO_R_I/O
7 REG_GND
8 VIDEO_I/O
9 REG_GND
10 AUDIO_L_I/O
11 AV_JACK_IN
12 S_GND
13 REG_GND
14 NTPB
15 TPB
16 TPA
17 NTPA
18 REG_GND
19 REG_GND
20 VCC
21 D+
22 REG_GND
23 REG_GND
24 D-
CN1002 28P
28 LANC_DC(N.C.)
27 XLANC_JACK_IN(N.C.)
26 LANC_SIG(N.C.)
25 A_4.6V
24 REG_GND
23 REG_GND
22 XSIRCS_SIG
21 SIRCS_PWM/IR_DRV_EM
20 VL_UNREG
19 VL_UNREG
18 V_LIGHT_PWM
17 UNREG_GND
16 UNREG_GND
15 VREF1
14 LIA1
13 A_2.8V
12 LIA2
11 VREF2
10 SE_GND
9 SE_GND
8 EXT_MIC_R(N.C.)
7 EXT_MIC_GND(N.C.)
6 EXT_MIC_L(N.C.)
5 MT_5V
4 XF_TALLY_LED
3 INT_MIC_L
2 INT_MIC_GND
1 INT_MIC_R
FP-762 FLEXIBLE
SI-035 BOARD
CN753 22P
A_4.6V 1
REG_GND 2
REG_GND 3
XSIRCS_SIG 4
SIRCS_PWM/IR_DRV_EM 5
VL_UNREG 6
VL_UNREG 7
V_LIGHT_PWM 8
UNREG_GND 9
UNREG_GND 10
VREF1 11
LIA1 12
A_2.8V 13
LIA2 14
VREF2 15
SE_GND 16
SE_GND 17
MT_5V 18
XF_TALLY_LED 19
INT_MIC_L 20
INT_MIC_GND 21
INT_MIC_R 22
MIC901
L
R
CN751 4P
1 INT_MIC_L
2 GND
3 INT_MIC_R
4 GND
CN754 6P
1 LIGHT GND
2 LIGHT GND
3
4
5 LIGHT VCC
6 LIGHT VCC
FP-569 FLEXIBLE BOARD
VIDEO LIGHT
VC-305 BOARD(1/2)
When the machine needs to be repaired,please refer to page 1-4 to discriminate the type of CCD(TYPE PA or TYPE SO).
CN1009 12P
XS/S_SW 1
REG_GND 2
XEJECT_SW 3
KEY_AD5 4
XPHOTO_FREEZE 5
REG_GND 6
D_2.8V 7
ZOOM_VR 8
XVTR_MODE_SW 9
XCAM_MODE_SW 10
XPHOTO_STBY_SW 11
REG_GND 12
CONTROL SWITCH BLOCK (SS-3000)
CN4001 6P
BATT_GND 1
BATT/XEXT 2
ACV_GND 3
ACV_UNREG 4
BATT_SIG 5
BATT_UNREG 6
BT901 BATTERY TERMINAL
CN1015 8P
MS_SCLK 1
MS_LED_ON 2
D_2.8V 3
REG_GND 4
MS_XIN 5
MS_DIO 6
MS_BS 7
USB_3.1V 8
(FOR JIG)
CN2401 2P
1 LM(-)
2 LM(+)
CN2402 10P
1 PG
2 FG-PG_COM
3 FG
4 COM
5 W
6 W
7 V
8 V
9 U
10 U
CN3201 11P
1 GND
2 GND
3 GND
4 XODD(SP1X)
5 YODD(SP1Y)
6 GND
7 XEVEN(SP2X)
8 YEVEN(SP2Y)
9 GND
10 FE(Y)
11 FE(X)
CN2403 22P
1 VH-
2 HW2
3 HW1
4 HV2
5 HV1
6 HU2
7 HU1
8 VH+
9 CAP_V
10 CAP_V
11 CAP_W
12 CAP_W
13 CAP_U
14 CAP_U
15 REG_GND
16 FG2
17 FG VCC
18 FG1
19 M-SW(C)
20 M-SW(B)
21 M-SW(A)
22 DEW
CN2404 15P
1 C_LOCK_SW
2 HI8_MP
3 REC_PROOF
4 ME/MP
5 HALL_COM
6 T_REEL(-)
7 T_REEL(+)
8 SENSOR_VCC
9 S_REEL(+)
10 S_REEL(-)
11 REG_GND
12 TAPE_LED(A)
13 TAPE_LED(K)
14 TAPE_END(C)
15 TAPE_TOP(C)
FP
FP
FP
FP
LM
M2200 MECHANISM DECK
05

FRAME SCHEMATIC DIAGRAM (2/2)


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J K
CN701 20P
20 XTALLY_LED
19 LED_DA
18 EVF_VDD
17 LED_ON/OFF
16 EVF_4.6V
15 D_2.8V
14 COM
13 VG
12 VR
11 VB
10 ANA_GND
9 ANA_GND
8 BLK
7 HCK1
6 HCK2
5 HST
4 EN
3 STB
2 VCK
1 VST
LB-083 BOARD
CN702 16P
VDD 1
VSS 2
VST 3
VCK 4
STB 5
EN 6
DWN 7
RGT 8
HST 9
HCK2 10
HCK1 11
BLK 12
VB 13
VR 14
VG 15
COM 16
LCD902 B/W EVF UNIT
FP-571 FLEXIBLE
CONTORL SWITCH BLOCK (CF-3000)
SEIDEN_GND
KEY_AD2
KEY_AD0
D_2.8V
REG_GND
BATT_INFO
SP(-)
SP(+)
SP901 (SPEAKER)
CONTROL SWITCH BLOCK (FK-3000)
CN1007 18P
18 SP-
17 SP+
16 REG_GND
15 XRESET
14 KEY_AD1
13 D_2.8V
12 DIAL_B
11 DIAL_A
10 REG_GND
9 KEY_AD3
8 D_2.8V
7 KEY_AD4
6 KEY_AD2
5 KEY_AD0
4 D_2.8V
3 REG_GND
2 BATT_INFO
1 LI_3V
CN1005 20P
1 XTALLY_LED
2 LED_DA
3 EVF_VDD
4 LED_ON/OFF
5 EVF_4.6V
6 D_2.8V
7 COM
8 VG
9 VR
10 VB
11 ANA_GND
12 ANA_GND
13 BLK
14 HCK1
15 HCK2
16 HST
17 EN
18 STB
19 VCK
20 VST
CONTINUED ON PAGE 4-2
VC-305 BOARD(2/2)
CN1011
16 LANC_SIG
15 VCO
14 EVF_VG
13 XLANC_POWER_ON
12 N.C
11 N.C
10 REG_GND
9 RF_MON
8 REG_GND
7 XLANC_JACK_IN
6 REG_GND
5 RF_SWP
4 CAP FG
3 BPF MONI
2 8mm PB RF
1 FRRV
CPC (FOR CHECK)
CN1003 20P
SE_GND 20
BL_GND 19
BL_REG 18
BL_CONT 17
PANEL_-15.3V 16
PANEL_13.3V 15
PANEL_4.6V 14
PANEL_2.8V 13
REG_GND 12
VD_SCK 11
XCS_LCD 10
VD_SO 9
PANEL_XVD 8
C-SYNC 7
PANEL_HOLD 6
PANEL_B 5
PANEL_G 4
PANEL_R 3
AD5 2
XSYS_RST 1
PD-118 HARNESS
CN5701 20P
20 SE_GND
19 BL_GND
18 BL_REG
17 BL_CONT
16 PANEL_-15.3V
15 PANEL_13.3V
14 PANEL_4.6V
13 PANEL_2.8V
12 REG_GND
11 VD_SCK
10 XCS_LCD_DA
9 VD_SO
8 PANEL_XVD
7 C-SYNC
6 PANEL_HOLD
5 PANEL_B
4 PANEL_G
3 PANEL_R
2 AD5
1 XSYS_RST
PD-180 BOARD
CN5501 24P
VGH/VGH 1
VSS/GND 2
VGL/VGL 3
VDD/VGLAC 4
N.C/SPS 5
GRES/EX1 6
GPCK/MO1 7
GSRT/MO2 8
STBYB/PSG 9
RESET/EX2 10
VCOM/VCOM 11
VBC/CLS 12
STBYB/RES 13
SRT/PSS1 14
OE/PSS2 15
CLR/CTR 16
MCLK/CLD 17
HCNT/SPD 18
VR/VR 19
VG/VG 20
VB/VB 21
VSS/GND 22
VDD/VSH3V 23
VSH/VSH5V 24
Note:CN5501PinName A/B A:TYPE C MODEL B:TYPE S MODEL
LCD901 2.5INCH
COLOR LCD UNIT
CN5601 10P
BL_HIGH 10
N.C 9
N.C 8
N.C 7
N.C 6
N.C 5
N.C 4
BL_LOW 3
LED 2
LED_GND 1
ND901 BACK LIGHT
CN5502 10P
1 VB
2 XVD_OUT
3 VG
4 PANEL_COM
5 VR
6 PANEL_ID
7 C-SYNC/XHD
8 XHD_OUT
9 GND
10 GND
CPC (FOR CHECK)
CN5702 6P
PANEL_REV 1
PANEL_REV 2
N.C. 3
N.C. 4
SE_GND 5
SE_GND 6
CONTROL SWITCH BLOCK (PR-3000)
05

When the machine needs to be repaired,please refer to page 1-4 to discriminate the type of CCD(TYPE PA or TYPE SO).

When the machine needs to be repaired,please refer to page 1-4 to discriminate the type of LCD(TYPE C or TYPE S).

COVER

4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μ μF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example C541 L452
22U 10UH
TA A 2520

Kinds of capacitor
Case size
External dimensions (mm)

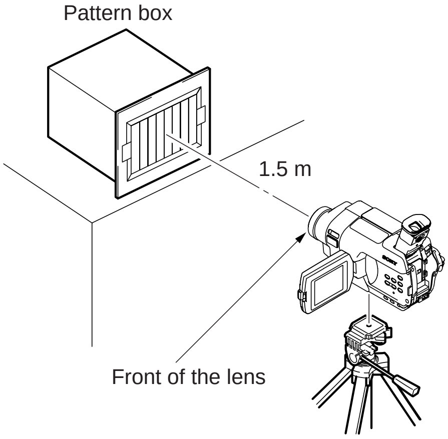
- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- ⊠ : non flammable resistor
- ▭ : fusible resistor
- ▭ : panel designation
- ▬ : B+ Line
- ╍ : B– Line
- ⇨ : IN/OUT direction of (+,–) B LINE.
- ▭ : adjustment for repair.
- ▬ : VIDEO SIGNAL (ANALOG)
- ▬ : AUDIO SIGNAL (ANALOG)
- ▬ : VIDEO/AUDIO SIGNAL
- ▬ : VIDEO/AUDIO/SERVO SIGNAL
- ▬ : VIDEO/SERVO SIGNAL
- ▬ : SERVO SIGNAL
- Circled numbers refer to waveforms.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

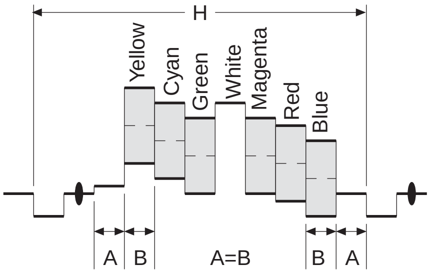


Fig. a (Video output terminal output waveform)

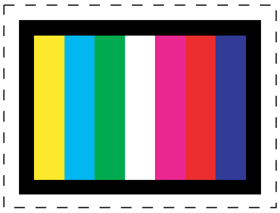


Fig.b (Picture on monitor TV)

When indicating parts by reference number, please include the board name.

Note : Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifie.

COVER

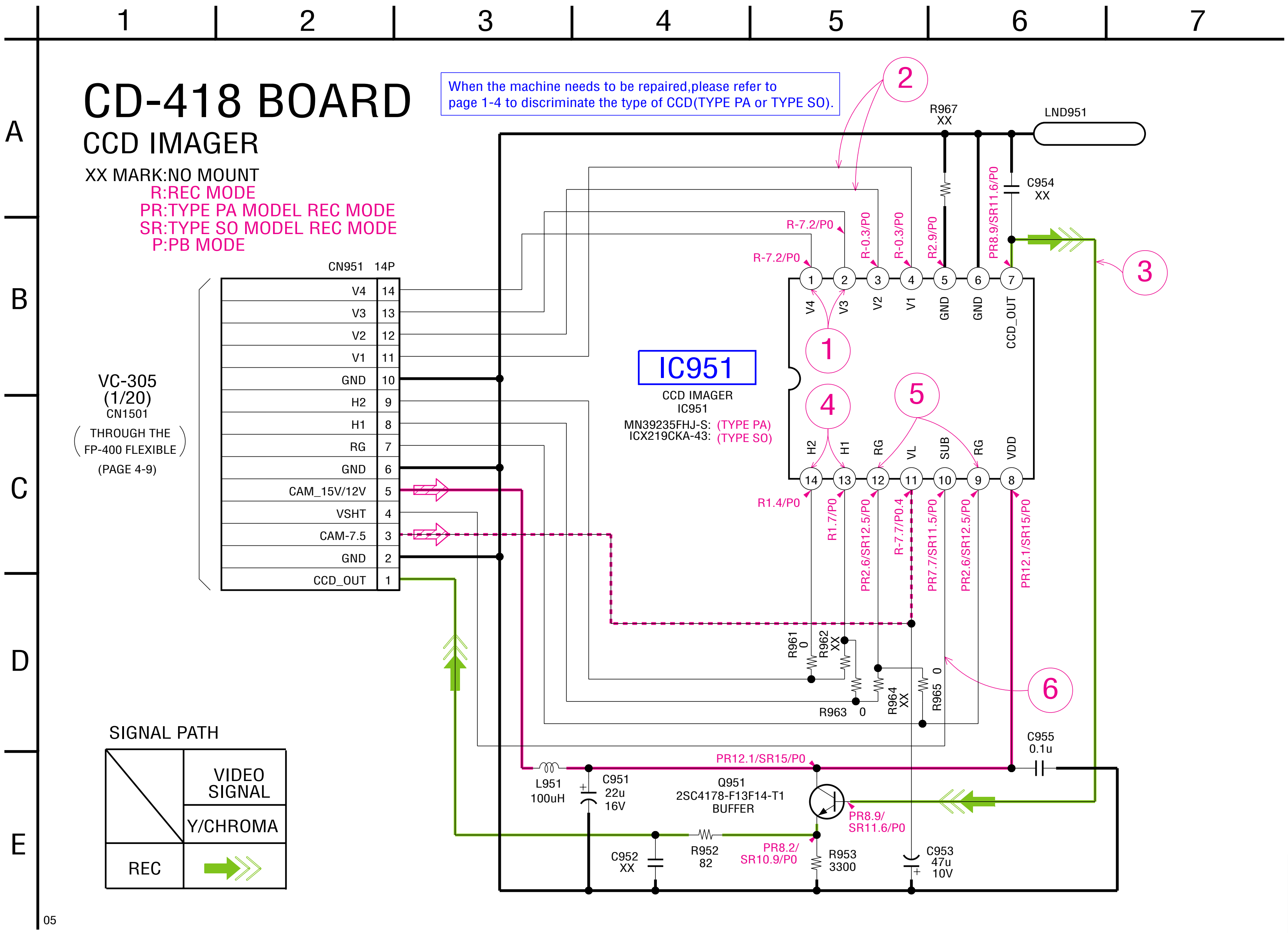
4-2. SCHEMATIC DIAGRAMS

Link

- CD-418 BOARD (CCD IMAGER)
- PD-180 BOARD (1/2)
  (RGB DRIVE, TIMING GENERATOR)
- PD-180 BOARD (2/2) (BACKLIGHT DRIVE)
- LB-083 BOARD (EVF, EVF BACKLIGHT)
- SI-035 BOARD (STEADYSHOT, MIC)
  FP-569 FLEXIBLE BOARD
- FP-577 FLEXIBLE BOARD
- LS-057 BOARD (S/T REEL SENSOR)
  FP-228, FP-299, FP-300, FP-301, FP-302 FLEXIBLE BOARD
- CONTROL SWITCH BLOCK (CF-3000, FK-3000)
- CONTROL SWITCH BLOCK (SS-3000, PR-3000)

- COMMON NOTE FOR SCHEMATIC DIAGRAMS
- WAVEFORMS

For Schematic Diagram
- Refer to page 4-65 for printed wiring board.
- Refer to page 4-81 for waveforms.

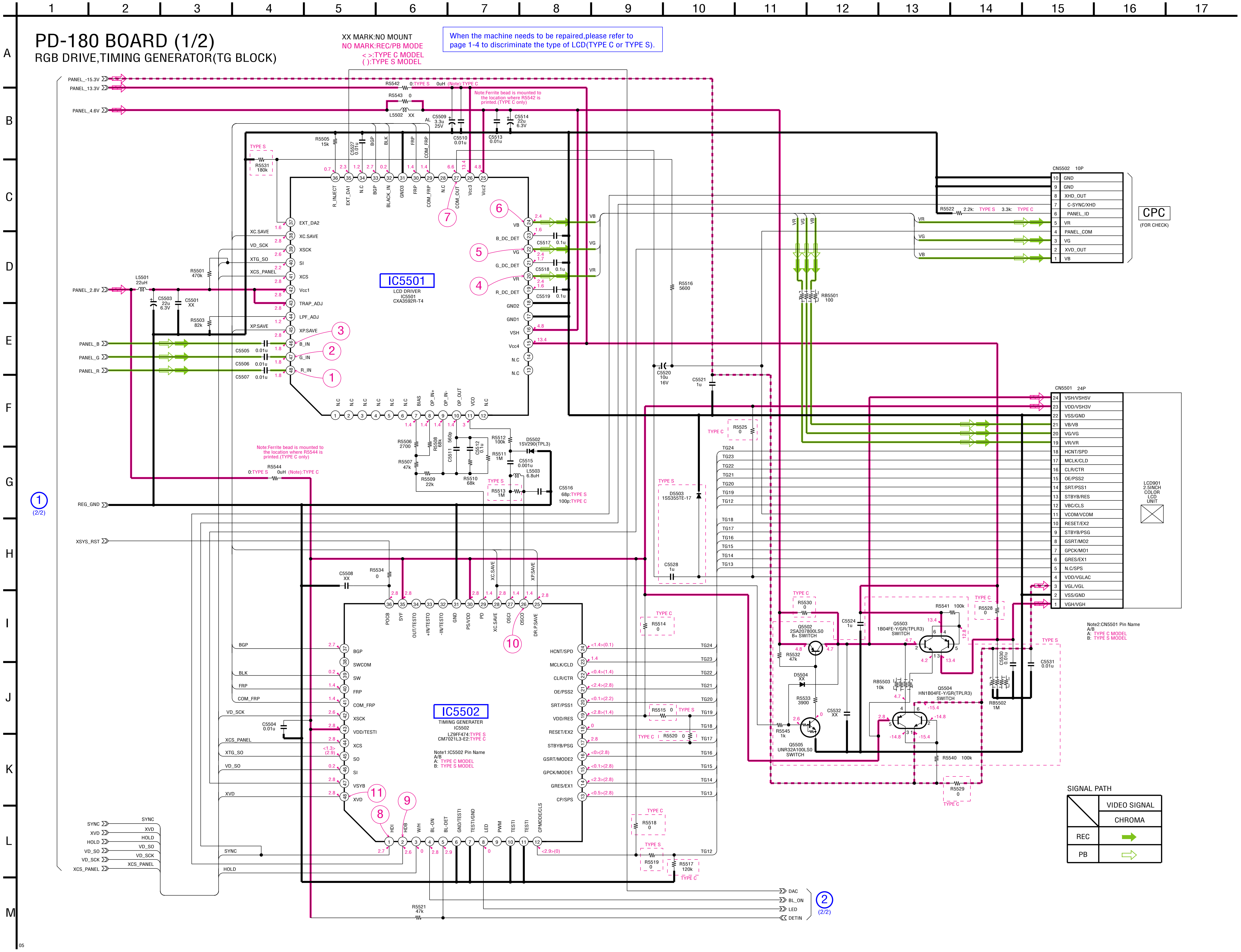

1
2
3
4
5
6
7
A
B
C
D
E
CD-418 BOARD
CCD IMAGER
XX MARK:NO MOUNT
R:REC MODE
PR:TYPE PA MODEL REC MODE
SR:TYPE SO MODEL REC MODE
P:PB MODE
When the machine needs to be repaired,please refer to page 1-4 to discriminate the type of CCD(TYPE PA or TYPE SO).
CN951 14P
V4 14
V3 13
V2 12
V1 11
GND 10
H2 9
H1 8
RG 7
GND 6
CAM_15V/12V 5
VSHT 4
CAM-7.5 3
GND 2
CCD_OUT 1
VC-305 (1/20) CN1501
THROUGH THE FP-400 FLEXIBLE
(PAGE 4-9)
IC951
CCD IMAGER
IC951
MN39235FHJ-S: (TYPE PA)
ICX219CKA-43: (TYPE SO)
V4
V3
V2
V1
GND
GND
CCD_OUT
H2
H1
RG
VL
SUB
RG
VDD
R-7.2/P0
R-7.2/P0
R-0.3/P0
R-0.3/P0
R2.9/P0
PR8.9/SR11.6/P0
R1.4/P0
R1.7/P0
PR2.6/SR12.5/P0
R-7.7/P0.4
PR7.7/SR11.5/P0
PR2.6/SR12.5/P0
PR12.1/SR15/P0
R967 XX
LND951
C954 XX
R961 0
R962 XX
R963 0
R964 XX
R965 0
C955 0.1u
PR12.1/SR15/P0
L951 100uH
C951 22u 16V
Q951 2SC4178-F13F14-T1 BUFFER
PR8.9/ SR11.6/P0
C952 XX
R952 82
PR8.2/ SR10.9/P0
R953 3300
C953 47u 10V
SIGNAL PATH
VIDEO SIGNAL
Y/CHROMA
REC
05

Precautions for Replacement of CCD Imager
- The CD-418 board mounted as a repair part is not equipped with a CCD imager.
  When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

Schematic diagrams of the VC-305 board are not shown.
Pages from 4-9 to 4-48 are not shown.

For Schematic Diagram

- Refer to page 4-71 for printed wiring board.
- Refer to page 4-86, 4-87 for waveforms.


PD-180 BOARD (1/2)
RGB DRIVE,TIMING GENERATOR(TG BLOCK)
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
< >:TYPE C MODEL
( ):TYPE S MODEL
When the machine needs to be repaired,please refer to page 1-4 to discriminate the type of LCD(TYPE C or TYPE S).
Note:Ferrite bead is mounted to the location where R5542 is printed.(TYPE C only)
Note:Ferrite bead is mounted to the location where R5544 is printed.(TYPE C only)
IC5501
LCD DRIVER
IC5501
CXA3592R-T4
IC5502
TIMING GENERATOR
IC5502
LZ9FF474:TYPE S
CM7021L3-E2:TYPE C
Note1:IC5502 Pin Name
A/B
A: TYPE C MODEL
B: TYPE S MODEL
CN5502 10P
CPC
(FOR CHECK)
CN5501 24P
LCD901
2.5INCH
COLOR
LCD
UNIT
Note2:CN5501 Pin Name
A/B
A: TYPE C MODEL
B: TYPE S MODEL
Q5503
1B04FE-Y/GR(TPLR3)
B+ SWITCH
Q5502
2SA2078OOLS0
B+ SWITCH
Q5504
HN1B04FE-Y/GR(TPLR3)
SWITCH
Q5505
UNR32A100LS0
SWITCH
D5502
1SV290(TPL3)
D5503
1SS355TE-17
PANEL_-15.3V
PANEL_13.3V
PANEL_4.6V
PANEL_2.8V
PANEL_B
PANEL_G
PANEL_R
REG_GND
XSYS_RST
SYNC
XVD
HOLD
VD_SO
VD_SCK
XCS_PANEL
DAC
BL_ON
LED
DETIN
① (2/2)
② (2/2)
SIGNAL PATH
VIDEO SIGNAL
CHROMA
REC
PB
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J K L M
05

For Schematic Diagram

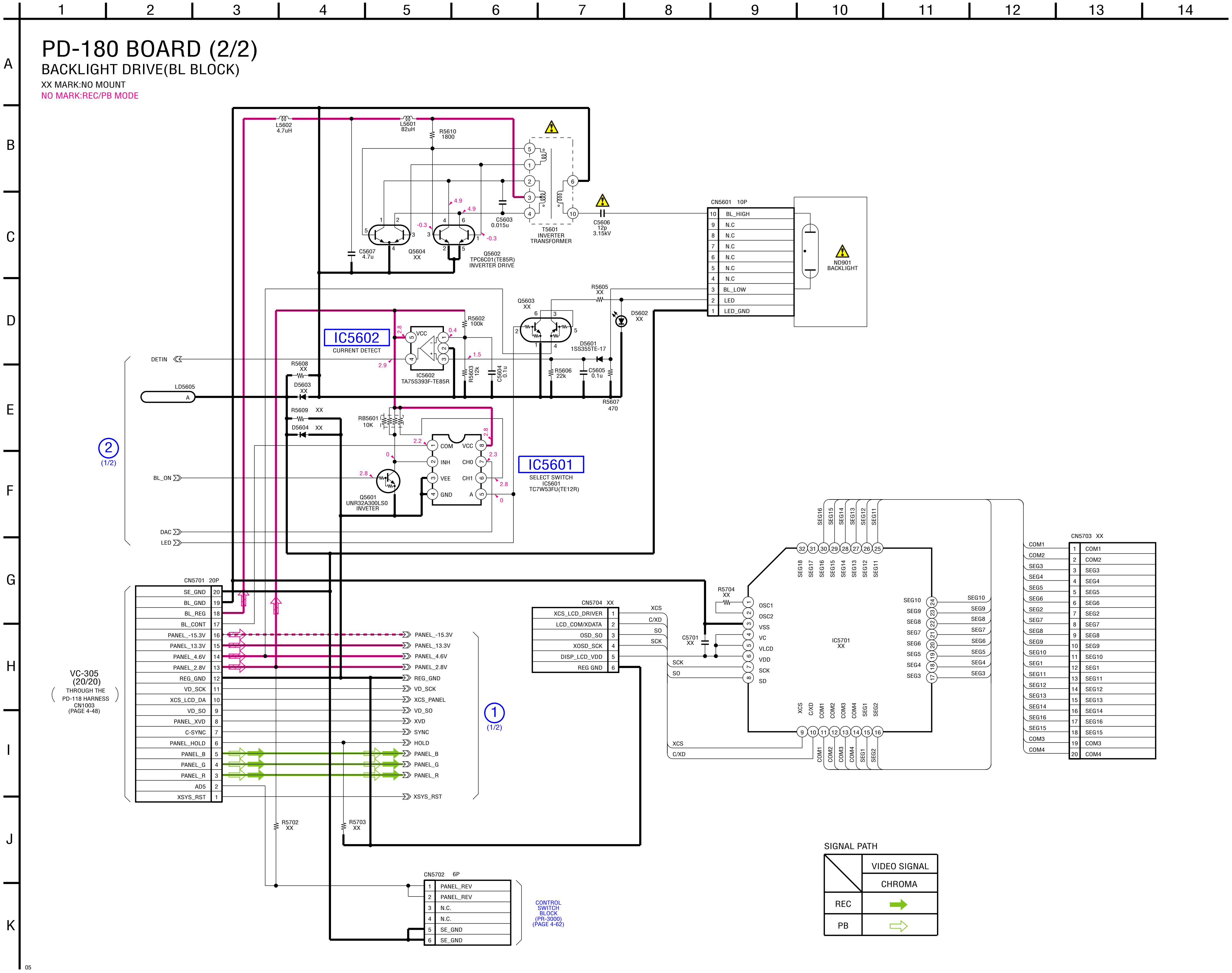
- Refer to page 4-71 for printed wiring board.

PD-180 BOARD (2/2)

BACKLIGHT DRIVE(BL BLOCK)

XX MARK:NO MOUNT

NO MARK:REC/PB MODE


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I J K
L5602 4.7uH
L5601 82uH
R5610 1800
T5601 INVERTER TRANSFORMER
C5606 12p 3.15kV
C5603 0.015u
C5607 4.7u
Q5604 XX
Q5602 TPC6C01(TE85R) INVERTER DRIVE
CN5601 10P
BL_HIGH
N.C
BL_LOW
LED
LED_GND
ND901 BACKLIGHT
R5605 XX
Q5603 XX
D5602 XX
D5601 1SS355TE-17
R5602 100k
IC5602
CURRENT DETECT
IC5602 TA75S393F-TE85R
VCC
R5603 12k
C5604 0.1u
R5606 22k
C5605 0.1u
R5607 470
DETIN
R5608 XX
D5603 XX
LD5605
R5609 XX
D5604 XX
RB5601 10K
IC5601
SELECT SWITCH
IC5601 TC7W53FU(TE12R)
COM VCC INH CH0 VEE CH1 GND A
Q5601 UNR32A300LS0 INVERTER
BL_ON
DAC
LED
2 (1/2)
CN5701 20P
SE_GND BL_GND BL_REG BL_CONT PANEL_-15.3V PANEL_13.3V PANEL_4.6V PANEL_2.8V REG_GND VD_SCK XCS_LCD_DA VD_SO PANEL_XVD C-SYNC PANEL_HOLD PANEL_B PANEL_G PANEL_R AD5 XSYS_RST
VC-305 (20/20) (THROUGH THE PD-118 HARNESS CN1003 (PAGE 4-48))
PANEL_-15.3V PANEL_13.3V PANEL_4.6V PANEL_2.8V REG_GND VD_SCK XCS_PANEL VD_SO XVD SYNC HOLD PANEL_B PANEL_G PANEL_R XSYS_RST
1 (1/2)
R5702 XX
R5703 XX
CN5702 6P
PANEL_REV PANEL_REV N.C. N.C. SE_GND SE_GND
CONTROL SWITCH BLOCK (PR-3000) (PAGE 4-62)
CN5704 XX
XCS_LCD_DRIVER LCD_COM/XDATA OSD_SO XOSD_SCK DISP_LCD_VDD REG GND
XCS C/XD SO SCK
C5701 XX
R5704 XX
IC5701 XX
OSC1 OSC2 VSS VC VLCD VDD SCK SD
SEG16 SEG15 SEG14 SEG13 SEG12 SEG11
SEG18 SEG17 SEG16 SEG15 SEG14 SEG13 SEG11
SEG10 SEG9 SEG8 SEG7 SEG6 SEG5 SEG4 SEG3
XCS C/XD COM1 COM2 COM3 COM4 SEG1 SEG2
CN5703 XX
COM1 COM2 SEG3 SEG4 SEG5 SEG6 SEG2 SEG7 SEG8 SEG9 SEG10 SEG1 SEG11 SEG12 SEG13 SEG14 SEG16 SEG15 COM3 COM4
05

SIGNAL PATH

	VIDEO SIGNAL
	CHROMA
REC	➡
PB	⇨

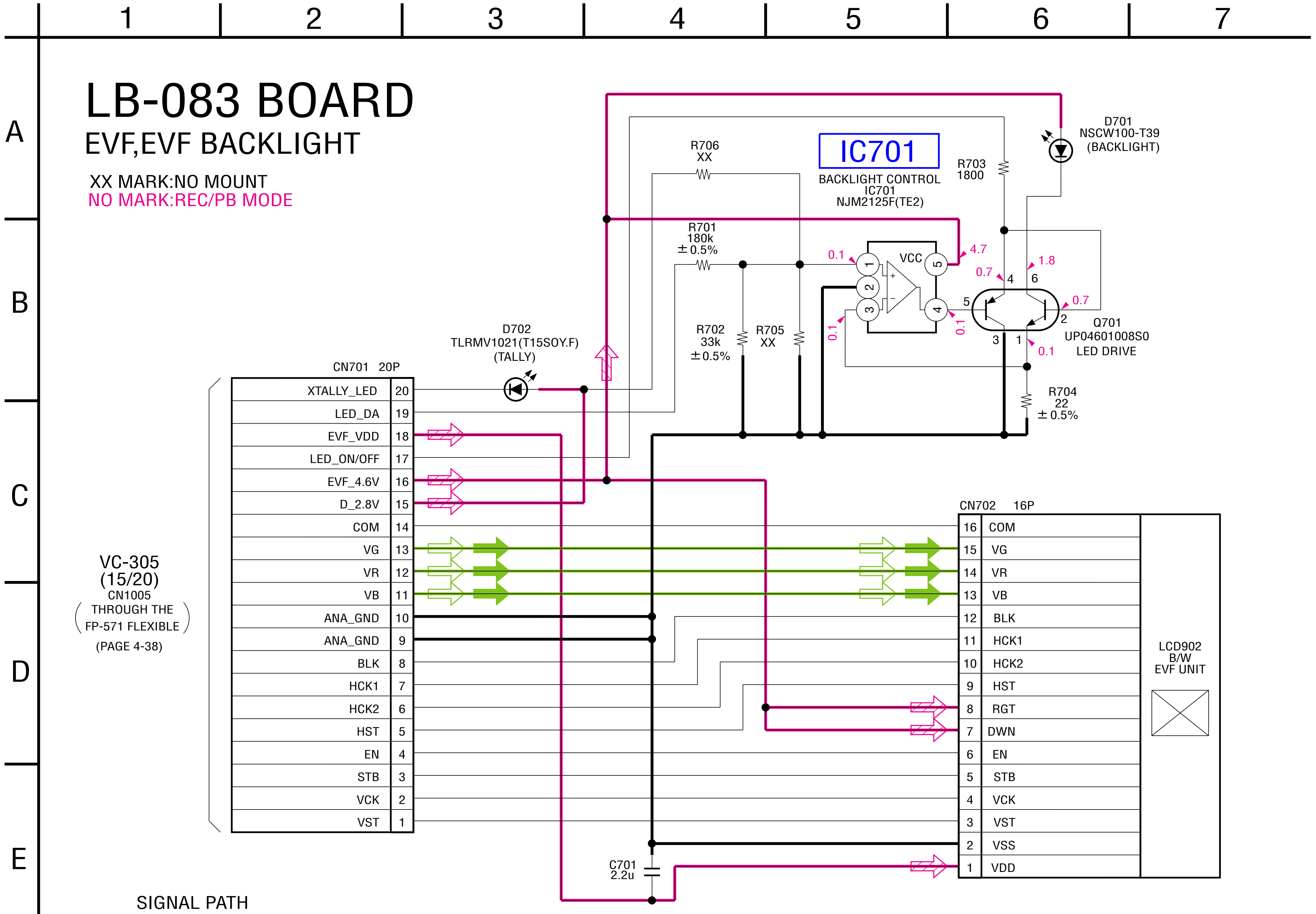
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

For Schematic Diagram
- Refer to page 4-75 for printed wiring board.

LB-083 BOARD

EVF,EVF BACKLIGHT

XX MARK:NO MOUNT
NO MARK:REC/PB MODE


1
2
3
4
5
6
7
A
B
C
D
E
R706
XX
IC701
BACKLIGHT CONTROL
IC701
NJM2125F(TE2)
R703
1800
D701
NSCW100-T39
(BACKLIGHT)
R701
180k
±0.5%
0.1
VCC
4.7
0.7
1.8
1
2
3
4
5
0.1
0.1
4
6
5
0.7
2
3
1
0.1
Q701
UP04601008S0
LED DRIVE
R702
33k
±0.5%
R705
XX
R704
22
±0.5%
D702
TLRMV1021(T15SOY.F)
(TALLY)
CN701 20P
XTALLY_LED 20
LED_DA 19
EVF_VDD 18
LED_ON/OFF 17
EVF_4.6V 16
D_2.8V 15
COM 14
VG 13
VR 12
VB 11
ANA_GND 10
ANA_GND 9
BLK 8
HCK1 7
HCK2 6
HST 5
EN 4
STB 3
VCK 2
VST 1
VC-305
(15/20)
CN1005
THROUGH THE
FP-571 FLEXIBLE
(PAGE 4-38)
CN702 16P
16 COM
15 VG
14 VR
13 VB
12 BLK
11 HCK1
10 HCK2
9 HST
8 RGT
7 DWN
6 EN
5 STB
4 VCK
3 VST
2 VSS
1 VDD
LCD902
B/W
EVF UNIT
C701
2.2u

SIGNAL PATH

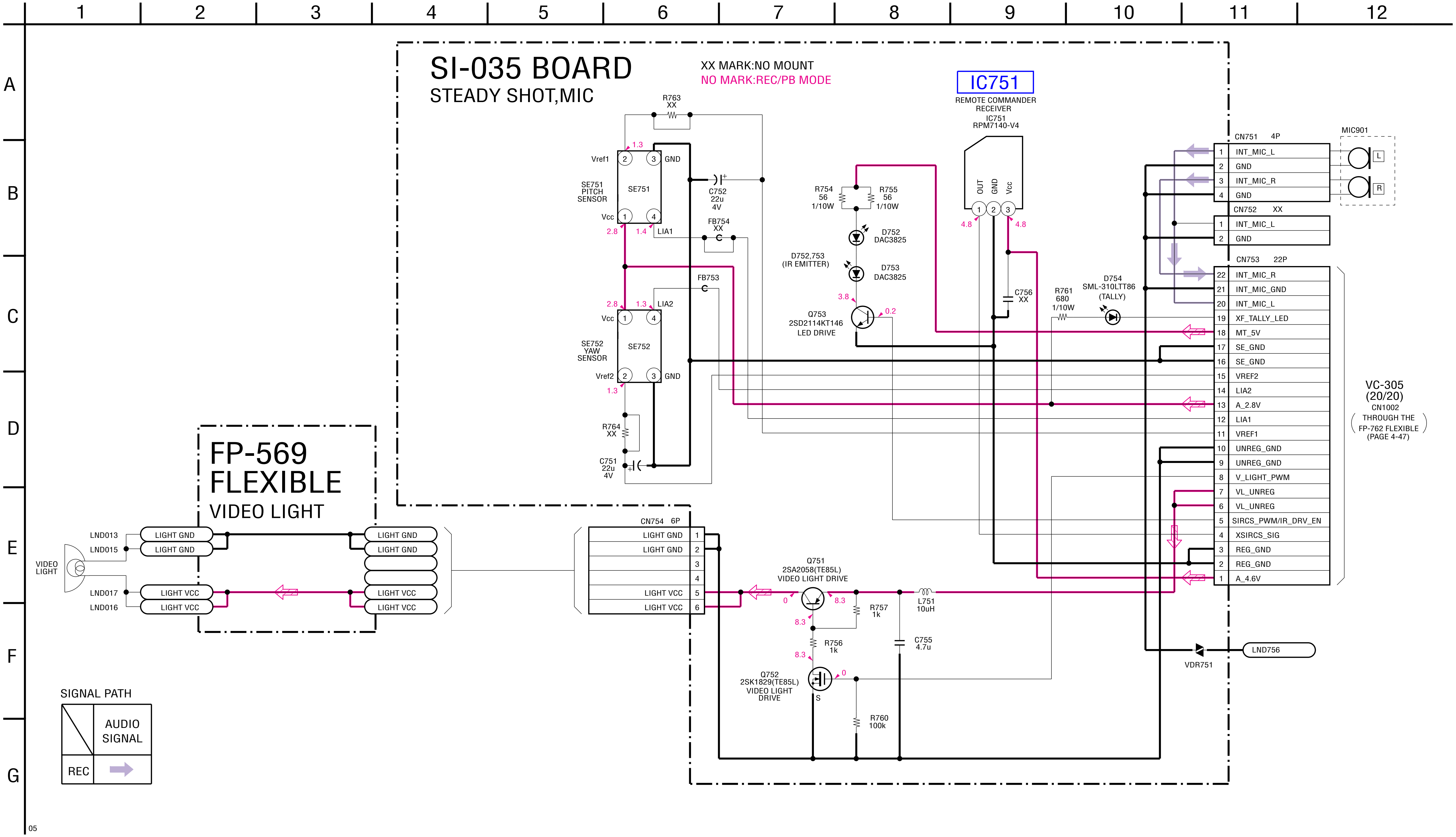
	VIDEO SIGNAL CHROMA
REC	➡
PB	⇨

F

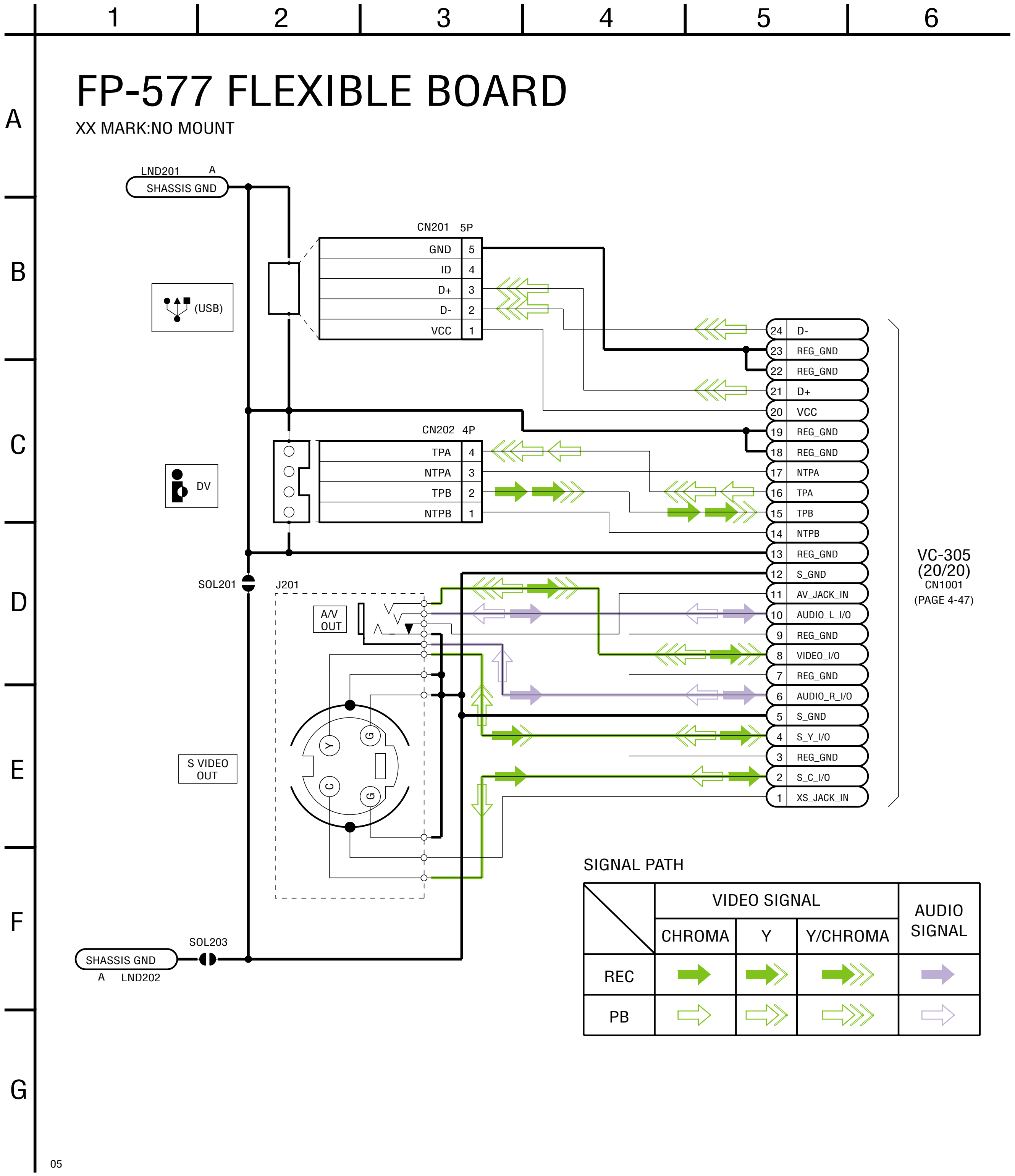
05

For Schematic Diagram

- Refer to page 4-77, 4-79 for printed wiring board.


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
SI-035 BOARD
STEADY SHOT,MIC
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
IC751
REMOTE COMMANDER RECEIVER
IC751 RPM7140-V4
OUT
GND
Vcc
4.8
4.8
R763 XX
1.3
Vref1
GND
SE751 PITCH SENSOR
SE751
Vcc
2.8
1.4
LIA1
C752 22u 4V
FB754 XX
FB753
2.8
1.3
LIA2
Vcc
SE752 YAW SENSOR
SE752
Vref2
GND
1.3
R764 XX
C751 22u 4V
R754 56 1/10W
R755 56 1/10W
D752 DAC3825
D752,753 (IR EMITTER)
D753 DAC3825
3.8
0.2
Q753 2SD2114KT146 LED DRIVE
C756 XX
R761 680 1/10W
D754 SML-310LTT86 (TALLY)
MIC901
L
R
CN751 4P
1 INT_MIC_L
2 GND
3 INT_MIC_R
4 GND
CN752 XX
1 INT_MIC_L
2 GND
CN753 22P
22 INT_MIC_R
21 INT_MIC_GND
20 INT_MIC_L
19 XF_TALLY_LED
18 MT_5V
17 SE_GND
16 SE_GND
15 VREF2
14 LIA2
13 A_2.8V
12 LIA1
11 VREF1
10 UNREG_GND
9 UNREG_GND
8 V_LIGHT_PWM
7 VL_UNREG
6 VL_UNREG
5 SIRCS_PWM/IR_DRV_EN
4 XSIRCS_SIG
3 REG_GND
2 REG_GND
1 A_4.6V
VC-305 (20/20) CN1002 THROUGH THE FP-762 FLEXIBLE (PAGE 4-47)
FP-569 FLEXIBLE
VIDEO LIGHT
LND013
LND015
LND017
LND016
VIDEO LIGHT
LIGHT GND
LIGHT GND
LIGHT VCC
LIGHT VCC
LIGHT GND
LIGHT GND
LIGHT VCC
LIGHT VCC
CN754 6P
1 LIGHT GND
2 LIGHT GND
3
4
5 LIGHT VCC
6 LIGHT VCC
Q751 2SA2058(TE85L) VIDEO LIGHT DRIVE
0
8.3
8.3
R757 1k
L751 10uH
R756 1k
8.3
C755 4.7u
Q752 2SK1829(TE85L) VIDEO LIGHT DRIVE
0
S
R760 100k
VDR751
LND756
SIGNAL PATH
AUDIO SIGNAL
REC
05

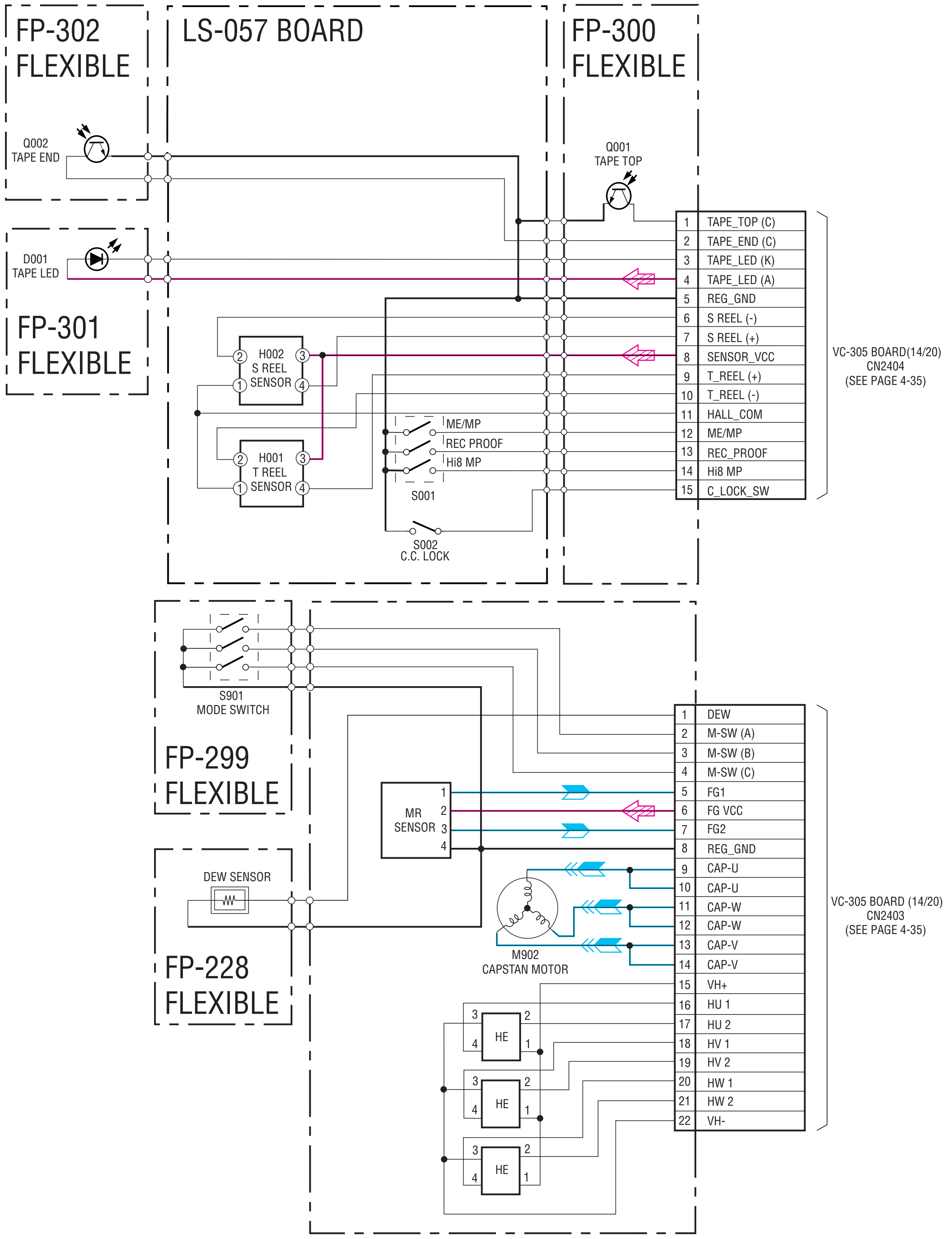
For Schematic Diagram
- Refer to page 4-79 for printed wiring board.


1
2
3
4
5
6
A
B
C
D
E
F
G
FP-577 FLEXIBLE BOARD
XX MARK:NO MOUNT
LND201 A
SHASSIS GND
(USB)
CN201 5P
GND 5
ID 4
D+ 3
D- 2
VCC 1
DV
CN202 4P
TPA 4
NTPA 3
TPB 2
NTPB 1
SOL201
J201
A/V OUT
S VIDEO OUT
Y
G
C
G
SHASSIS GND
A LND202
SOL203
24 D-
23 REG_GND
22 REG_GND
21 D+
20 VCC
19 REG_GND
18 REG_GND
17 NTPA
16 TPA
15 TPB
14 NTPB
13 REG_GND
12 S_GND
11 AV_JACK_IN
10 AUDIO_L_I/O
9 REG_GND
8 VIDEO_I/O
7 REG_GND
6 AUDIO_R_I/O
5 S_GND
4 S_Y_I/O
3 REG_GND
2 S_C_I/O
1 XS_JACK_IN
VC-305 (20/20) CN1001 (PAGE 4-47)
05

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

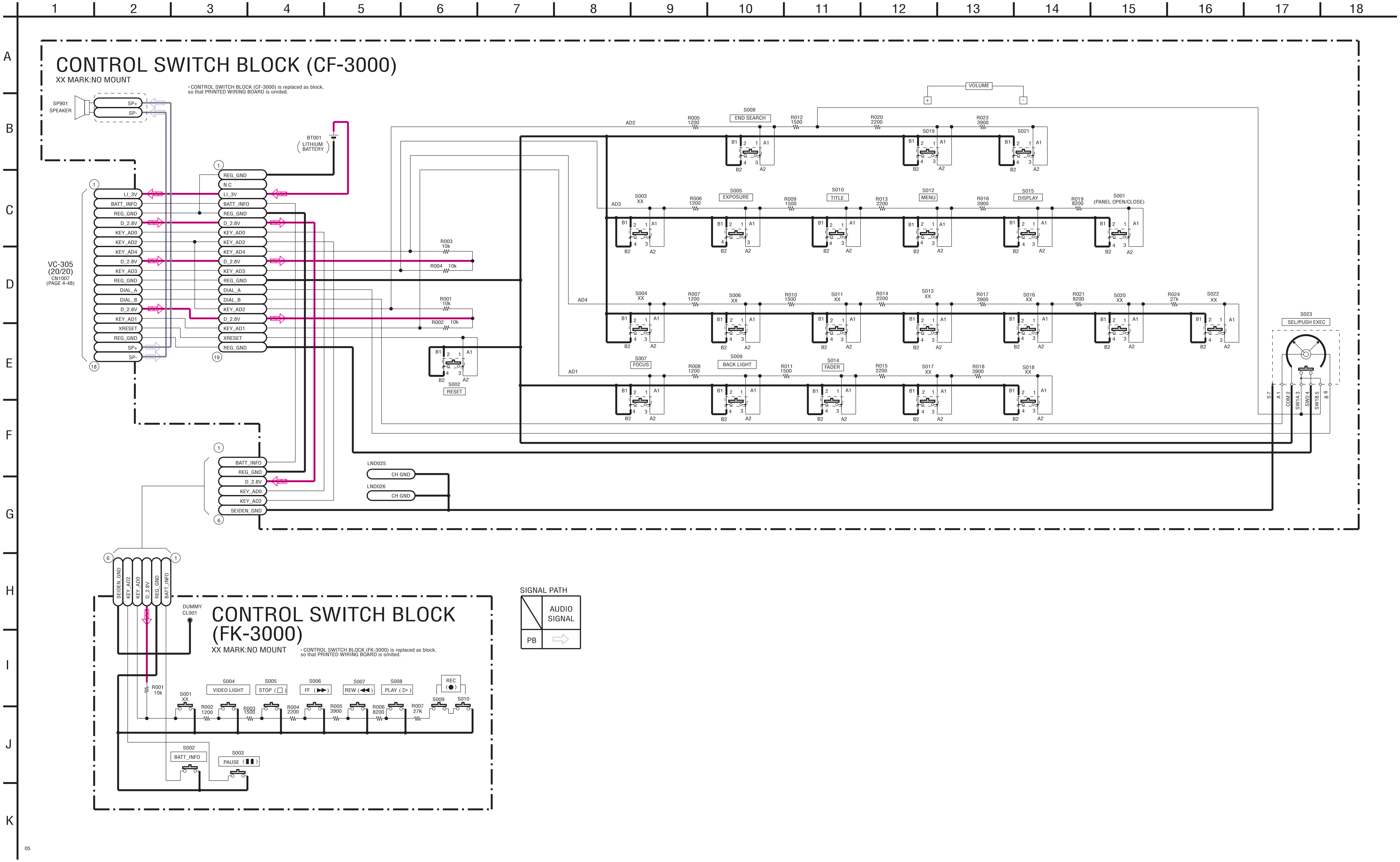
For Schematic Diagram
- Refer to page 4-80 for printed wiring board.


FP-302 FLEXIBLE
LS-057 BOARD
FP-300 FLEXIBLE
Q002 TAPE END
Q001 TAPE TOP
D001 TAPE LED
FP-301 FLEXIBLE
H002 S REEL SENSOR
H001 T REEL SENSOR
ME/MP
REC PROOF
Hi8 MP
S001
S002 C.C. LOCK
1 TAPE_TOP (C)
2 TAPE_END (C)
3 TAPE_LED (K)
4 TAPE_LED (A)
5 REG_GND
6 S REEL (-)
7 S REEL (+)
8 SENSOR_VCC
9 T_REEL (+)
10 T_REEL (-)
11 HALL_COM
12 ME/MP
13 REC_PROOF
14 Hi8 MP
15 C_LOCK_SW
VC-305 BOARD(14/20) CN2404 (SEE PAGE 4-35)
S901 MODE SWITCH
FP-299 FLEXIBLE
MR SENSOR
DEW SENSOR
FP-228 FLEXIBLE
M902 CAPSTAN MOTOR
HE
HE
HE
1 DEW
2 M-SW (A)
3 M-SW (B)
4 M-SW (C)
5 FG1
6 FG VCC
7 FG2
8 REG_GND
9 CAP-U
10 CAP-U
11 CAP-W
12 CAP-W
13 CAP-V
14 CAP-V
15 VH+
16 HU 1
17 HU 2
18 HV 1
19 HV 2
20 HW 1
21 HW 2
22 VH-
VC-305 BOARD (14/20) CN2403 (SEE PAGE 4-35)

SIGNAL PATH

	REC	REC/PB	PB
Capstan speed servo		➡	
Capstan servo(speed and phase)		➡»	

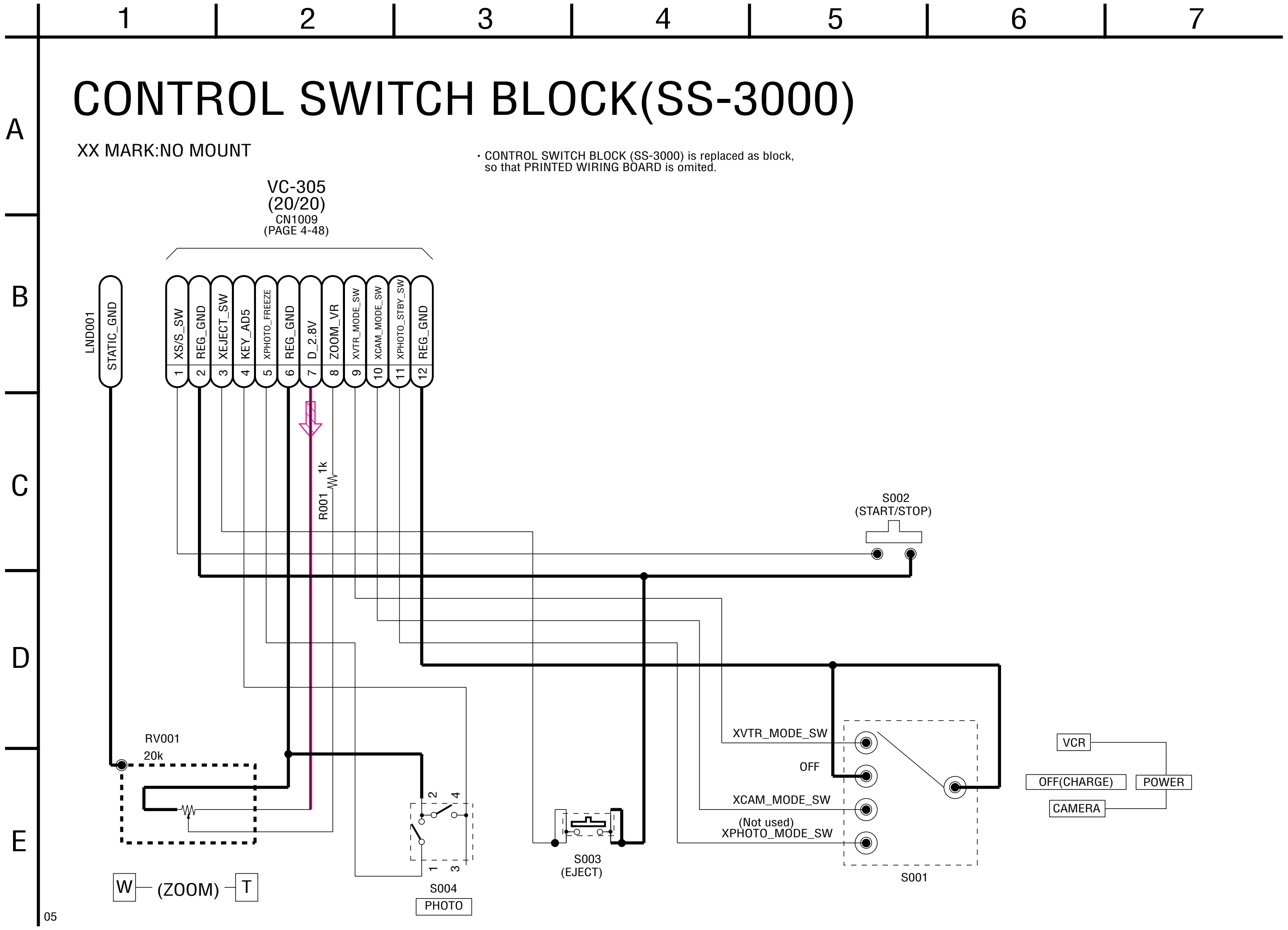
4-2. SCHEMATIC DIAGRAMS


CONTROL SWITCH BLOCK (CF-3000)
XX MARK:NO MOUNT
• CONTROL SWITCH BLOCK (CF-3000) is replaced as block, so that PRINTED WIRING BOARD is omitted.
SP901 SPEAKER
SP+
SP-
BT001 LITHIUM BATTERY
VC-305 (20/20) CN1007 (PAGE 4-48)
LI_3V
BATT_INFO
REG_GND
D_2.8V
KEY_AD0
KEY_AD2
KEY_AD4
KEY_AD3
DIAL_A
DIAL_B
KEY_AD1
XRESET
N.C
SEIDEN_GND
R003 10k
R004 10k
R001 10k
R002 10k
S002 RESET
AD1
AD2
AD3
AD4
S008 END SEARCH
S019
S021
VOLUME
S003 XX
S005 EXPOSURE
S010 TITLE
S012 MENU
S015 DISPLAY
S001 (PANEL OPEN/CLOSE)
S004 XX
S006 XX
S011 XX
S013 XX
S016 XX
S020 XX
S022 XX
S007 FOCUS
S009 BACK LIGHT
S014 FADER
S017 XX
S018 XX
S023 SEL/PUSH EXEC
R005 1200
R012 1500
R020 2200
R023 3900
R006 1200
R009 1500
R013 2200
R016 3900
R019 8200
R007 1200
R010 1500
R014 2200
R017 3900
R021 8200
R024 27k
R008 1200
R011 1500
R015 2200
R018 3900
LND025 CH GND
LND026 CH GND
S7 A1 COM 2 SW1A 3 SW2 4 SW1B 5 B 6
CONTROL SWITCH BLOCK (FK-3000)
XX MARK:NO MOUNT
• CONTROL SWITCH BLOCK (FK-3000) is replaced as block, so that PRINTED WIRING BOARD is omitted.
DUMMY CL001
R001 10k
S001 XX
S004 VIDEO LIGHT
S005 STOP (□)
S006 FF (▶▶)
S007 REW (◀◀)
S008 PLAY (▷)
REC (●)
S009
S010
R002 1200
R003 1500
R004 2200
R005 3900
R006 8200
R007 27K
S002 BATT_INFO
S003 PAUSE (▮▮)
SIGNAL PATH
AUDIO SIGNAL
PB
05

CONTROL SWITCH BLOCK(SS-3000)

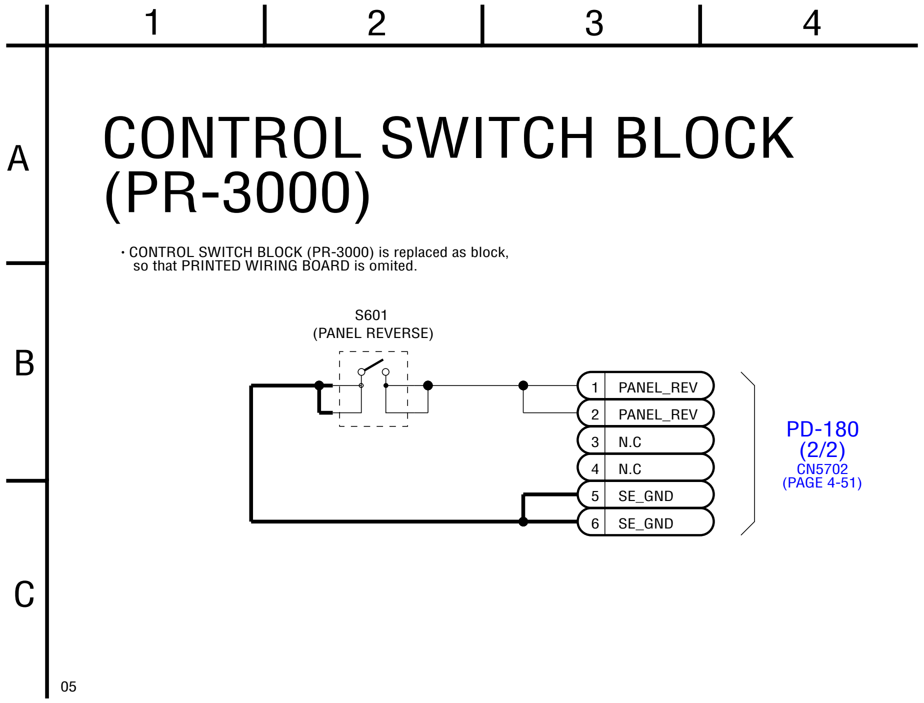
XX MARK:NO MOUNT

- CONTROL SWITCH BLOCK (SS-3000) is replaced as block, so that PRINTED WIRING BOARD is omited.


1
2
3
4
5
6
7
A
B
C
D
E
VC-305
(20/20)
CN1009
(PAGE 4-48)
LND001
STATIC_GND
1 XS/S_SW
2 REG_GND
3 XEJECT_SW
4 KEY_AD5
5 XPHOTO_FREEZE
6 REG_GND
7 D_2.8V
8 ZOOM_VR
9 XVTR_MODE_SW
10 XCAM_MODE_SW
11 XPHOTO_STBY_SW
12 REG_GND
R001 1k
S002
(START/STOP)
RV001
20k
W
(ZOOM)
T
2
4
1
3
S004
PHOTO
S003
(EJECT)
XVTR_MODE_SW
OFF
XCAM_MODE_SW
(Not used)
XPHOTO_MODE_SW
S001
VCR
OFF(CHARGE)
POWER
CAMERA
05

CONTROL SWITCH BLOCK (PR-3000)

- CONTROL SWITCH BLOCK (PR-3000) is replaced as block, so that PRINTED WIRING BOARD is omited.

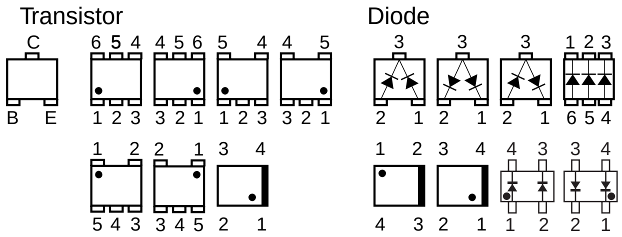

1
2
3
4
A
B
C
S601
(PANEL REVERSE)
1 PANEL_REV
2 PANEL_REV
3 N.C
4 N.C
5 SE_GND
6 SE_GND
PD-180
(2/2)
CN5702
(PAGE 4-51)
05

4-3. PRINTED WIRING BOARDS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS

- LF : Uses unleaded solder.
- 🟩 : Circuit board
  🟧 : Flexible board
  Pattern from the side which enables seeing.
  ▨ : pattern of the rear side
  (The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- ▭ : panel designation

- Chip parts.


Transistor
Diode
C
B E
6 5 4
1 2 3
4 5 6
3 2 1
5 4
1 2 3
4 5
3 2 1
1 2
5 4 3
2 1
3 4 5
3 4
2 1
3
2 1
3
2 1
3
2 1
1 2 3
6 5 4
1 2
4 3
3 4
2 1
4 3
1 2
3 4
2 1

Board Name	Parts Location	Waveforms	Pattern	
			Total Number of Layers	Layers Not Indicated
CD-418	–	4-81	2 layers	–
PD-180	4-90	4-86	2 layers	–
LB-083	–	–	8 layers	2 to 7 layers
SI-035	4-90	–	2 layers	–

COVER

4-3. PRINTED WIRING BOARDS

Link

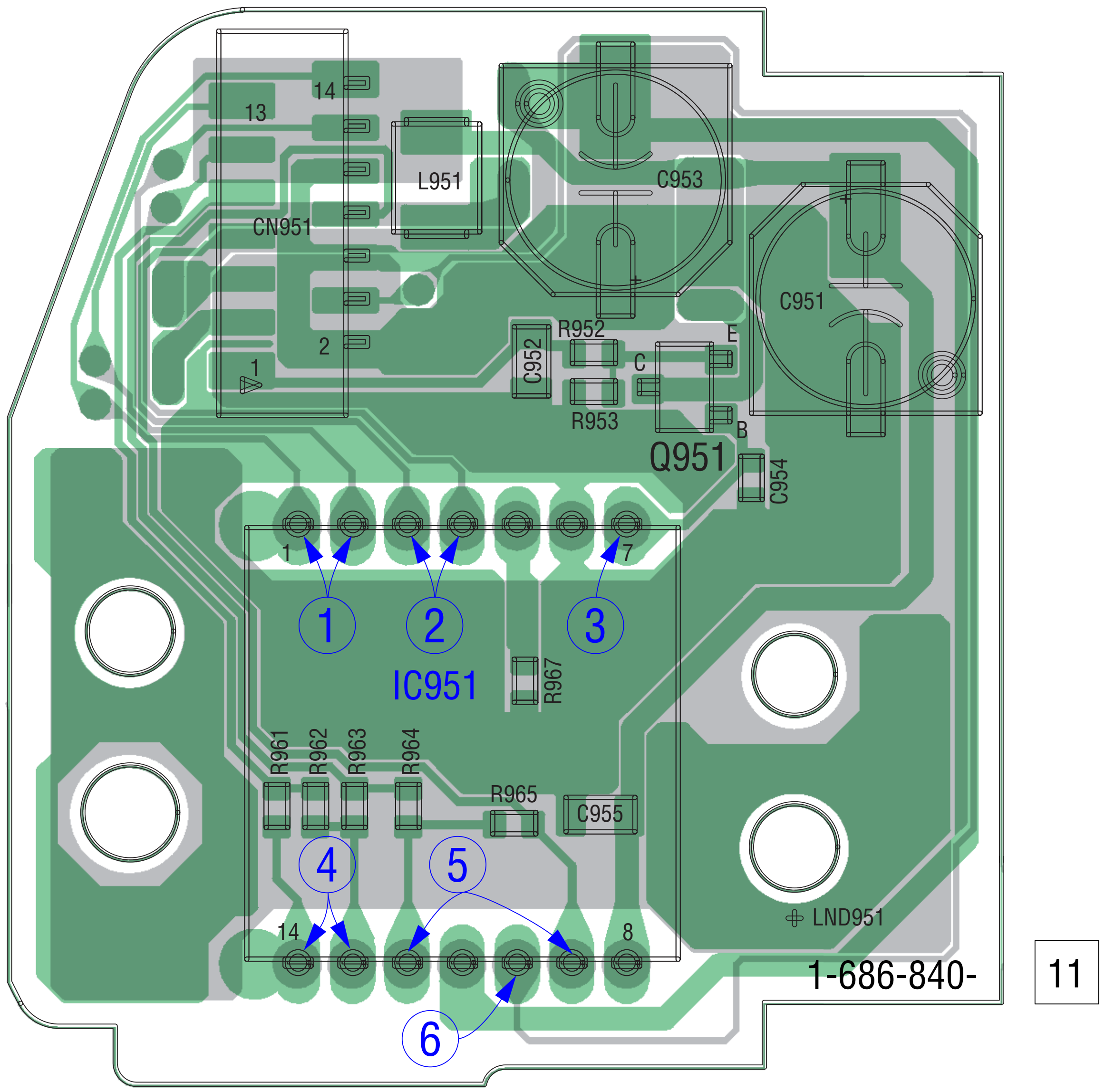
- CD-418 BOARD
- LB-083 BOARD
- PD-180 BOARD (SIDE A)
- SI-035 BOARD
- PD-180 BOARD (SIDE B)
- LS-057 BOARD, FP-228, FP-299, FP-300,FP-301, FP-302, FP-569, FP-577 FLEXIBLE BOARD

- COMMON NOTE FOR PRINTED WIRING BOARDS
- WAVEFORMS
- MOUNTED PARTS LOCATION
- CIRCUIT BOARDS LOCATION
- FLEXIBLE BOARDS LOCATION

CD-418 (CCD IMAGER)

Note for Printed Wiring Board (See page 4-63).

CD-418 BOARD

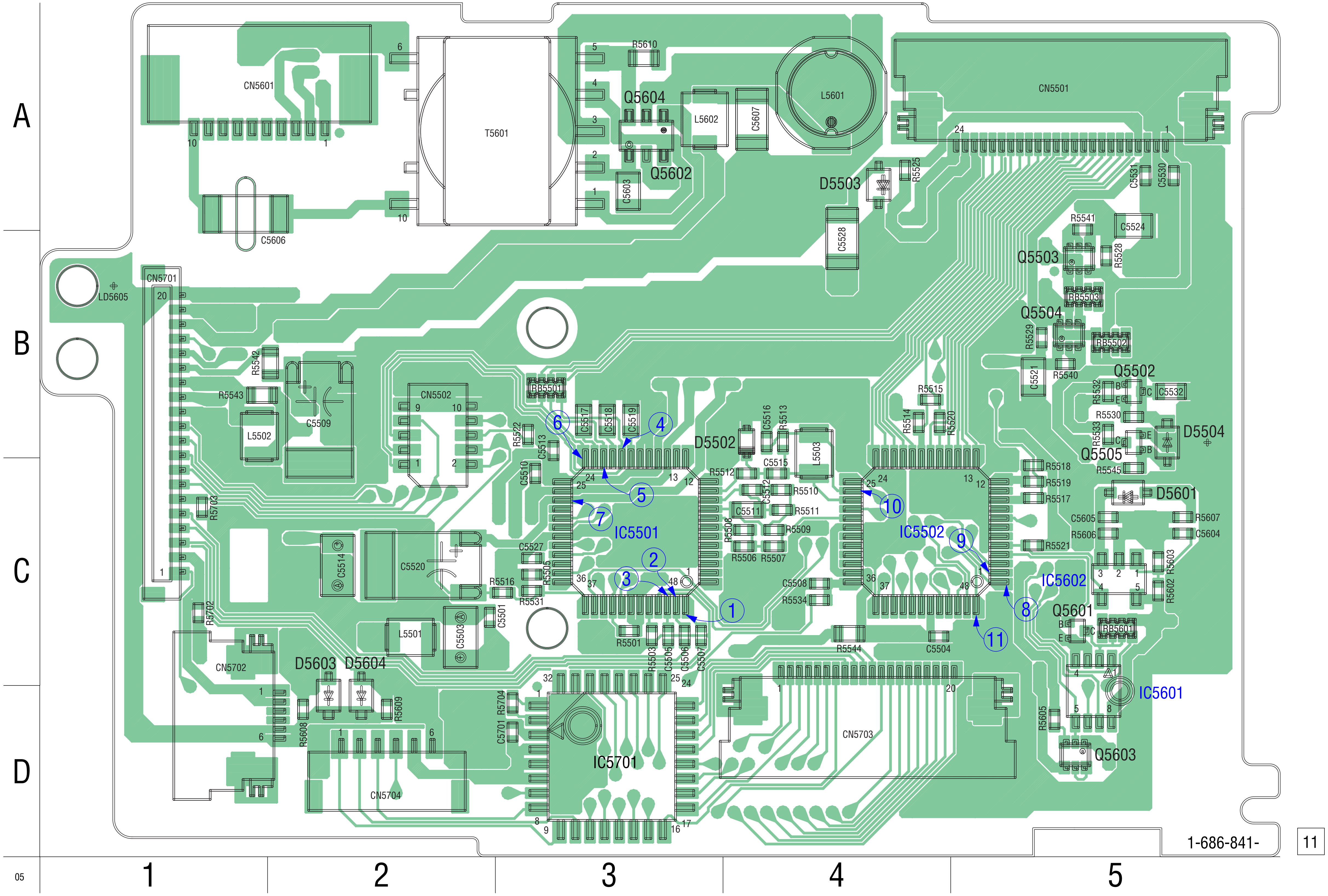

13
14
L951
C953
CN951
C951
2
1
R952
E
C952
C
R953
B
Q951
C954
1
7
①
②
③
IC951
R967
R961
R962
R963
R964
R965
C955
④
⑤
14
8
LND951
1-686-840-
11
⑥

Printed wiring boards of the VC-305 board are not shown.
Pages from 4-67 to 4-70 are not shown.

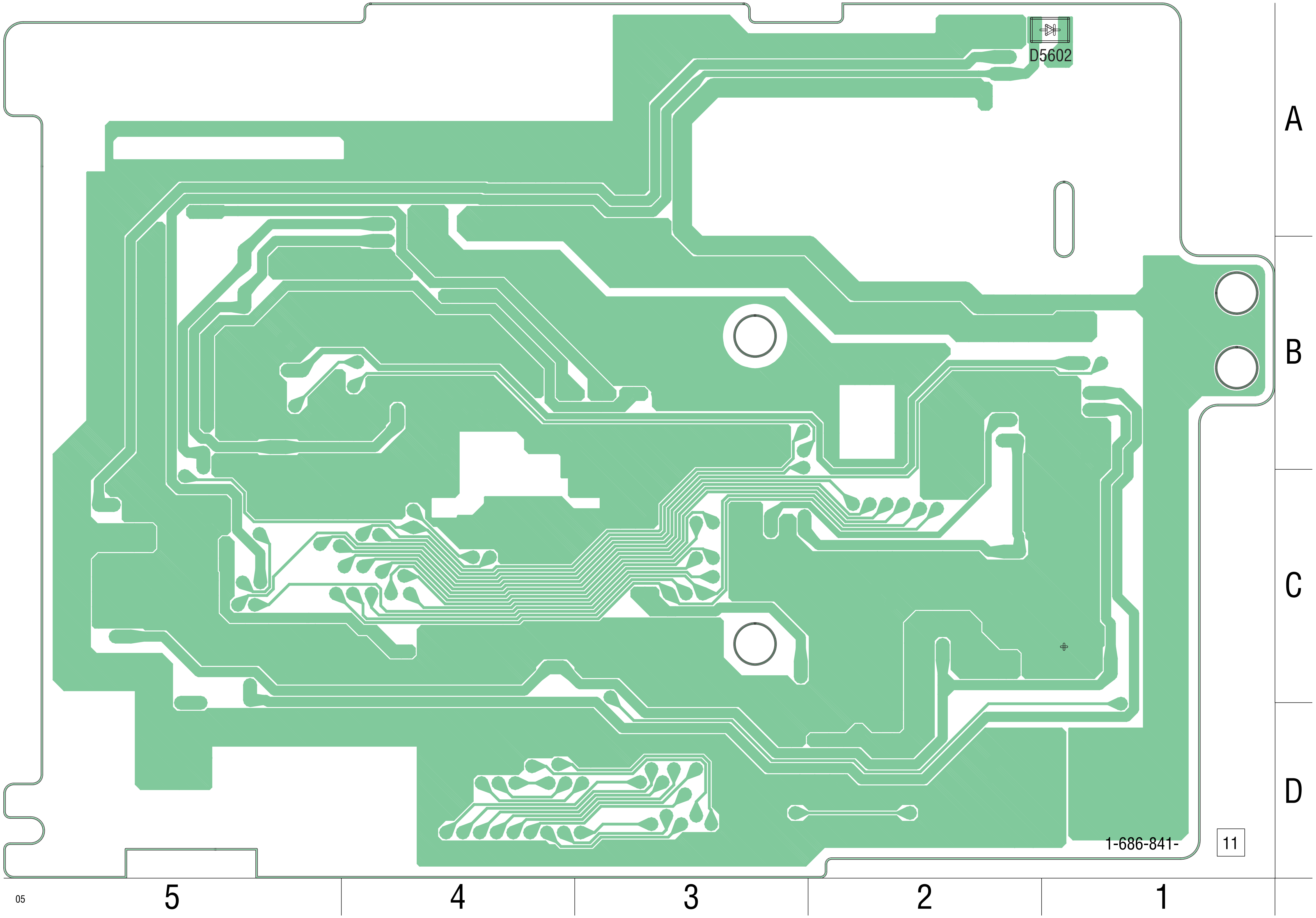
PD-180 (RGB DRIVE, TIMING GENERATOR, BACKLIGHT DRIVE)

Note for Printed Wiring Board (See page 4-63).

PD-180 BOARD (SIDE A)


A
B
C
D
1
2
3
4
5
05
CN5601
T5601
R5610
Q5604
Q5602
L5602
C5607
L5601
CN5501
C5603
C5606
D5503
R5525
C5528
C5531
C5530
R5541
C5524
Q5503
R5528
RB5503
Q5504
R5529
RB5502
C5521
R5540
Q5502
C5532
R5532
R5530
D5504
R5533
Q5505
R5545
LD5605
CN5701
R5542
R5543
C5509
L5502
CN5502
RB5501
R5522
C5513
C5517
C5518
C5519
D5502
C5516
R5513
L5503
R5515
R5514
R5520
R5512
C5515
C5510
C5512
R5510
C5511
R5511
R5508
R5509
R5506
R5507
IC5501
IC5502
R5518
R5519
R5517
D5601
C5605
R5607
R5606
C5604
R5521
IC5602
R5603
R5602
Q5601
RB5601
R5703
C5514
C5520
C5527
R5505
R5516
R5531
C5508
R5534
C5501
C5503
L5501
R5501
R5503
C5505
C5506
C5507
R5544
C5504
R5702
CN5702
D5603
D5604
R5609
R5608
CN5704
R5704
C5701
IC5701
CN5703
IC5601
R5605
Q5603
1
2
3
4
5
6
7
8
9
10
11
1-686-841-
11

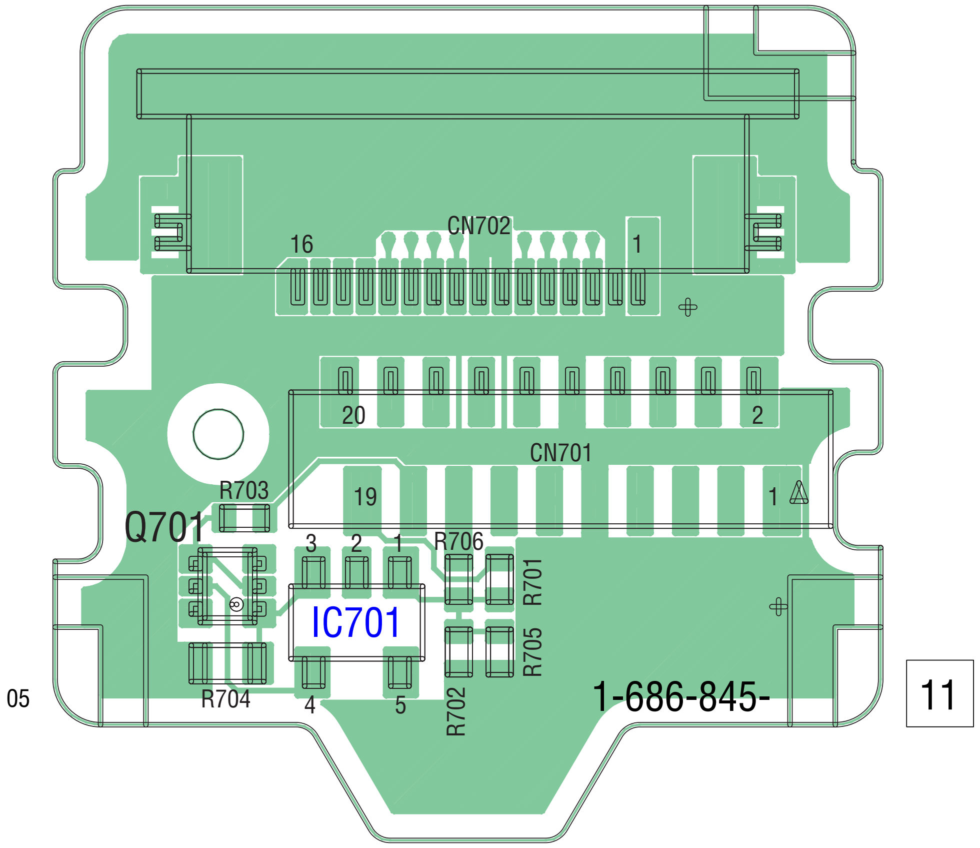
PD-180 BOARD (SIDE B)


D5602
A
B
C
D
5
4
3
2
1
1-686-841-
11
05

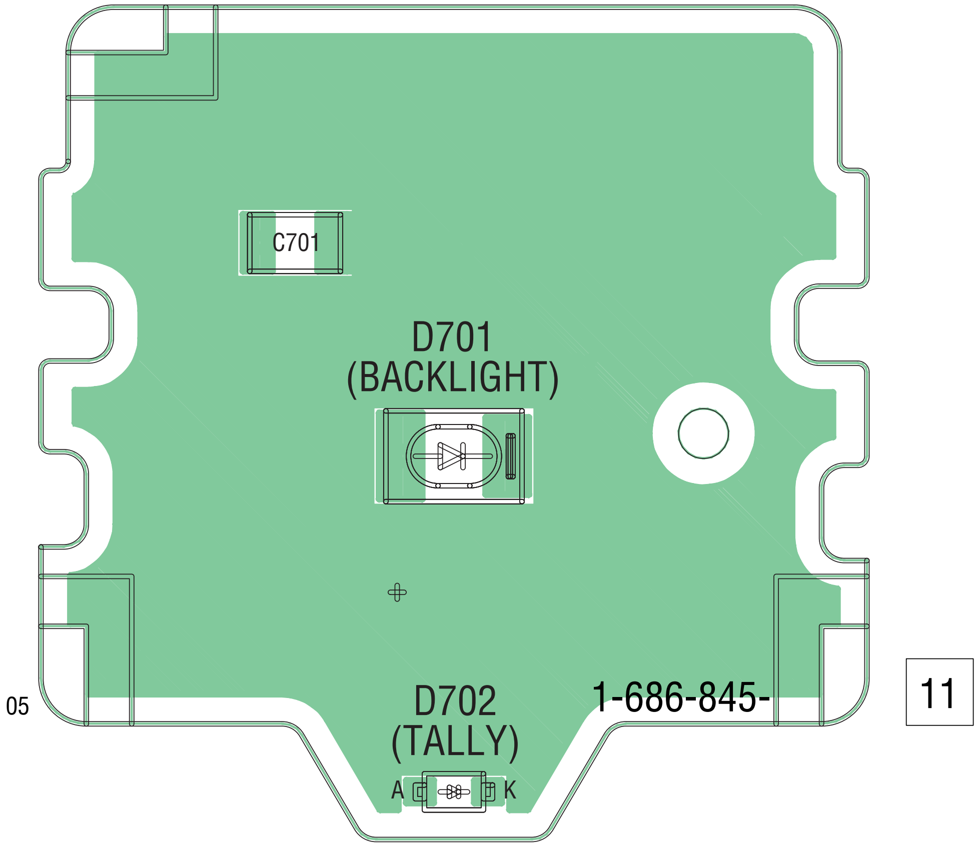
LB-083 (EVF BACKLIGHT)

Note for Printed Wiring Board (See page 4-63).

LB-083 BOARD (SIDE A)


CN702
16
1
20
2
CN701
19
1
R703
Q701
3
2
1
R706
R701
IC701
R705
R704
4
5
R702
05
1-686-845-
11

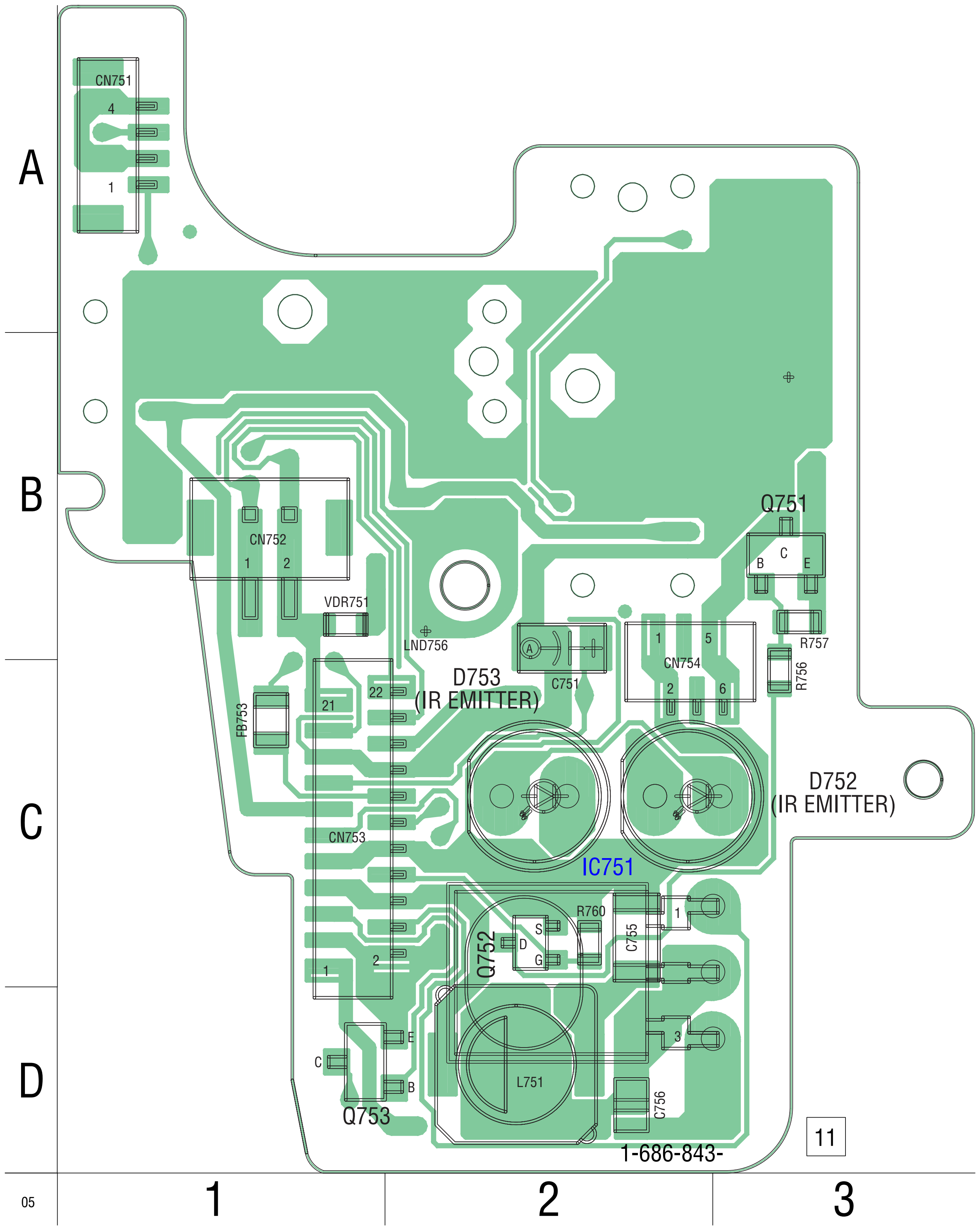
LB-083 BOARD (SIDE B)


C701
D701
(BACKLIGHT)
05
D702
(TALLY)
A
K
1-686-845-
11

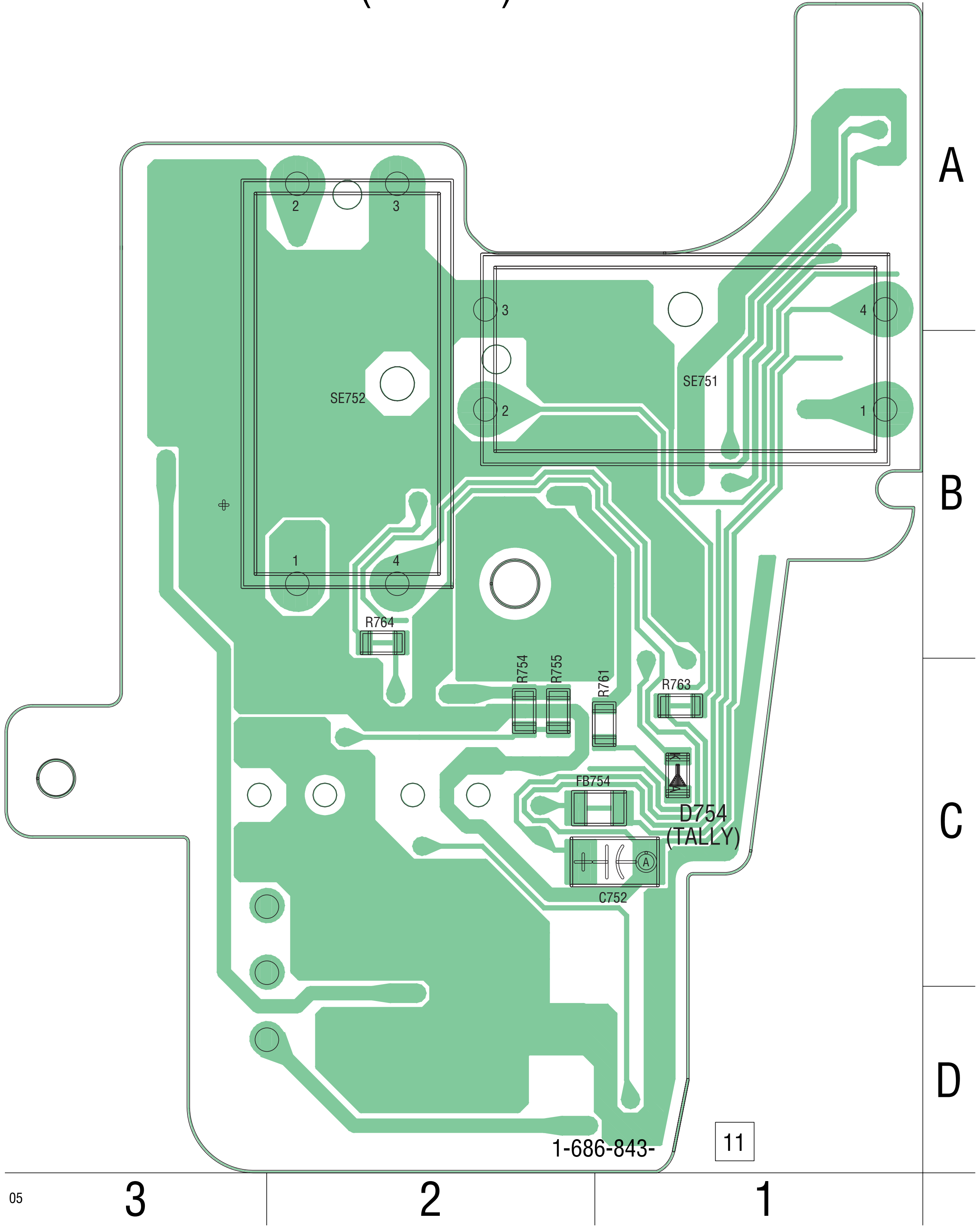
SI-035 (STEADYSHOT, MIC)

Note for Printed Wiring Board (See page 4-63).

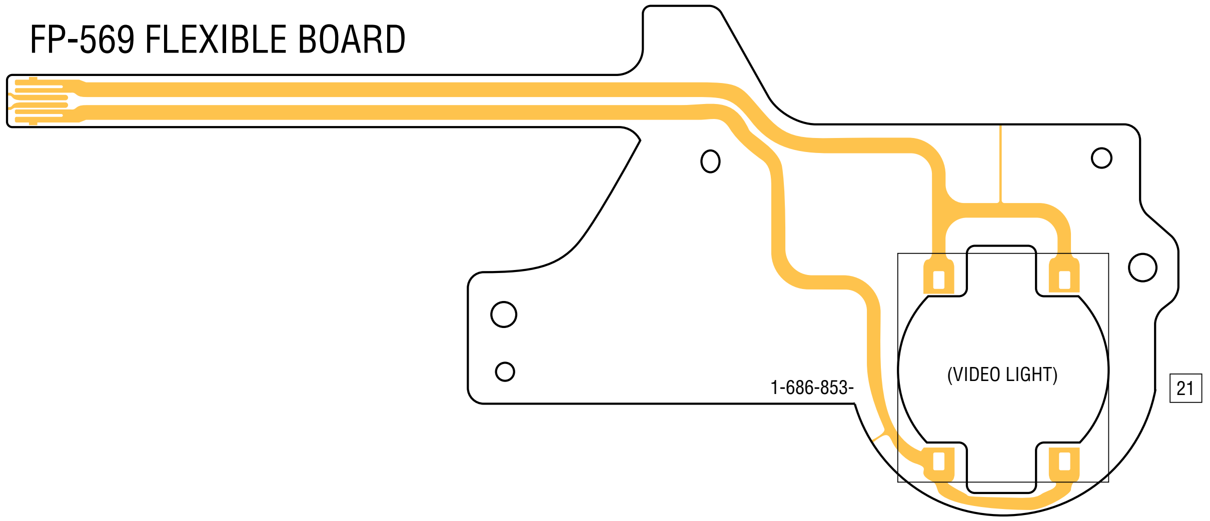
SI-035 BOARD (SIDE A)

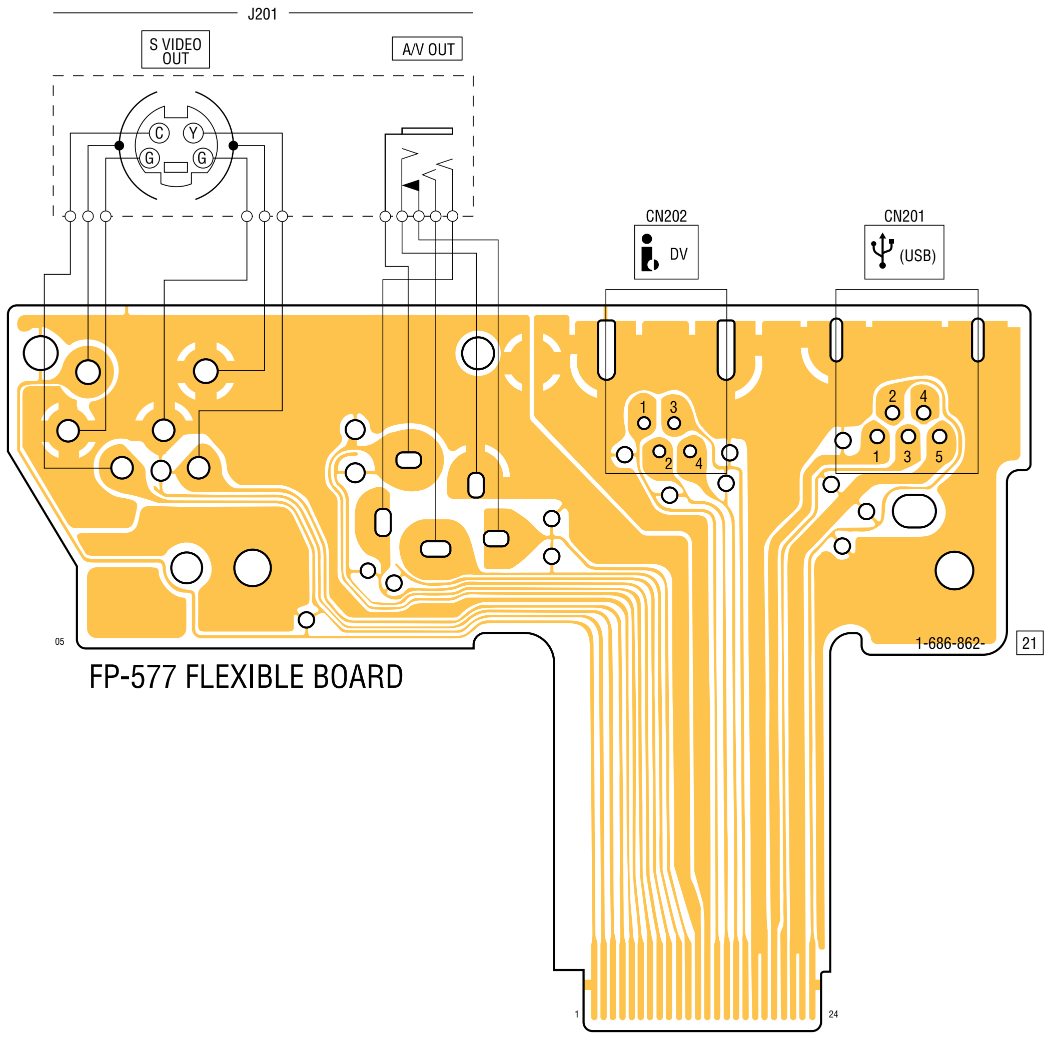

A
B
C
D
CN751
4
1
CN752
1
2
VDR751
LND756
D753
(IR EMITTER)
C751
A
CN754
1
5
2
6
Q751
C
B
E
R757
R756
D752
(IR EMITTER)
FB753
21
22
CN753
1
2
IC751
R760
S
D
G
Q752
C755
1
3
L751
C
E
B
Q753
C756
1-686-843-
11
05
1
2
3

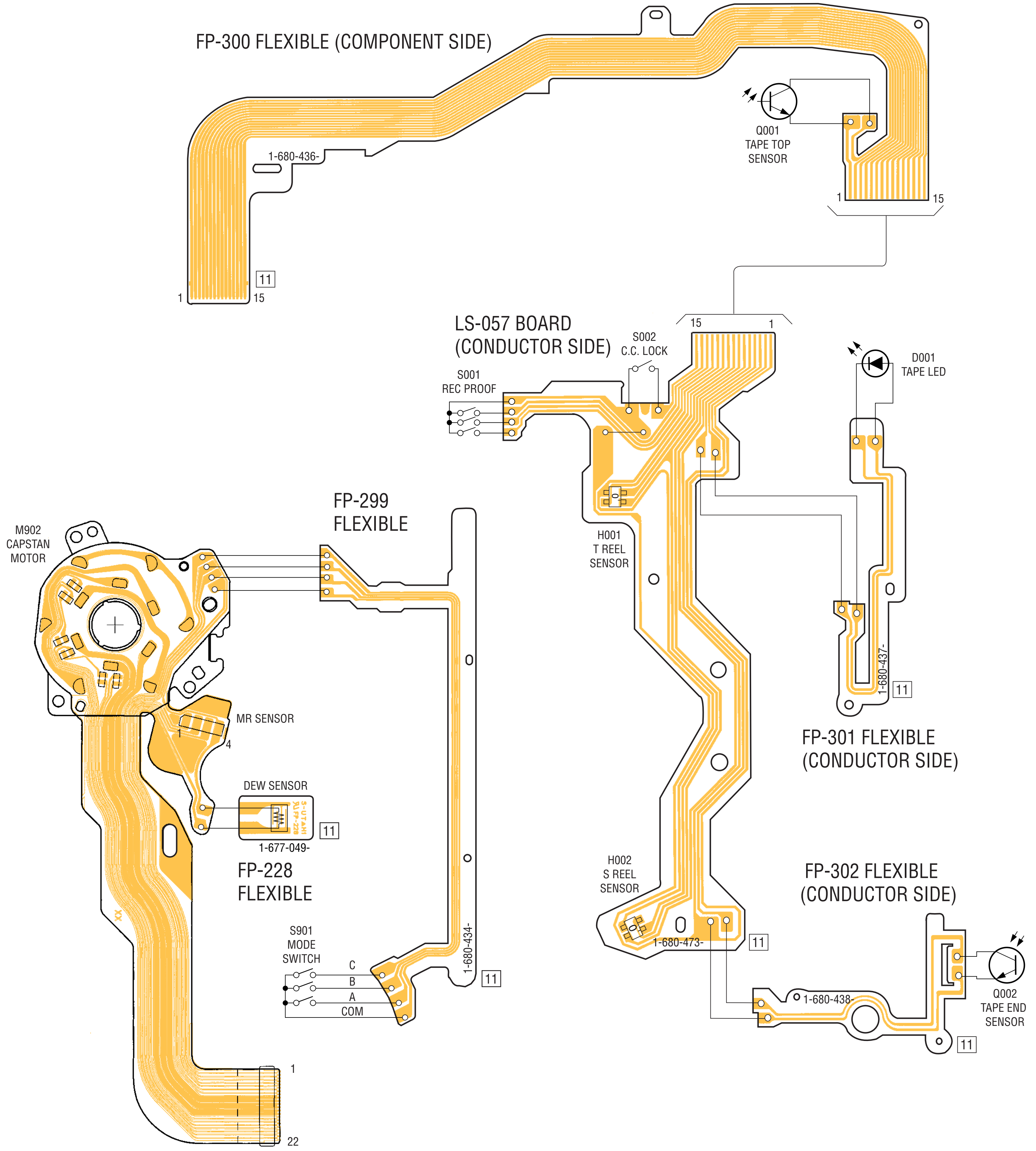
SI-035 BOARD (SIDE B)


A
B
C
D
SE752
2
3
1
4
SE751
3
4
2
1
R764
R754
R755
R761
R763
FB754
D754
(TALLY)
C752
A
1-686-843-
11
05
3
2
1

LS-057 (S/T REEL SENSOR), FP-228, FP-299, FP-300, FP-301, FP-302, FP-569, FP-577 FLEXIBLE


FP-569 FLEXIBLE BOARD
1-686-853-
(VIDEO LIGHT)
21

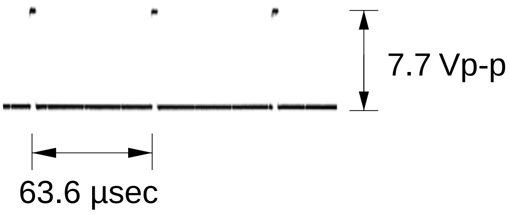

J201
S VIDEO OUT
A/V OUT
C
Y
G
G
CN202
DV
CN201
(USB)
1
3
2
4
2
4
1
3
5
05
1-686-862-
21
FP-577 FLEXIBLE BOARD
1
24


FP-300 FLEXIBLE (COMPONENT SIDE)
1-680-436-
11
1
15
Q001
TAPE TOP
SENSOR
1
15
LS-057 BOARD
(CONDUCTOR SIDE)
15
1
S002
C.C. LOCK
S001
REC PROOF
D001
TAPE LED
H001
T REEL
SENSOR
FP-299
FLEXIBLE
M902
CAPSTAN
MOTOR
MR SENSOR
1
4
DEW SENSOR
11
1-677-049-
FP-228
FLEXIBLE
1-680-437-
11
FP-301 FLEXIBLE
(CONDUCTOR SIDE)
H002
S REEL
SENSOR
1-680-473-
11
FP-302 FLEXIBLE
(CONDUCTOR SIDE)
1-680-438-
Q002
TAPE END
SENSOR
11
S901
MODE
SWITCH
C
B
A
COM
1-680-434-
11
1
22

4-4. WAVEFORMS

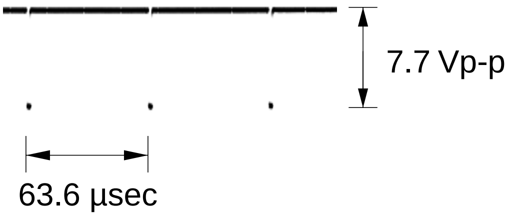
CD-418 BOARD

①



IC951 ①, ② REC

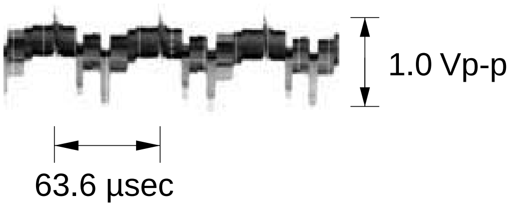
②



IC951 ③, ④ REC

③

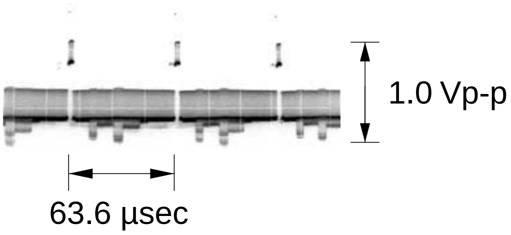
TYPE PA



IC951 ⑦ REC

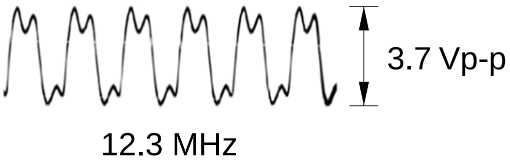
③

TYPE SO



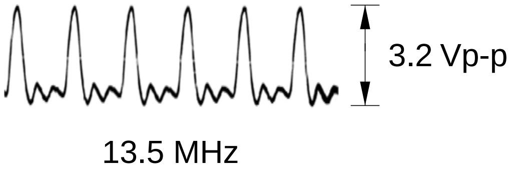
IC951 ⑦ REC

④



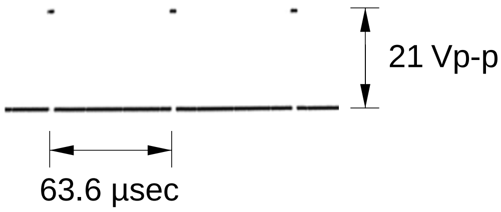
IC951 ⑬, ⑭ REC

⑤



IC951 ⑨, ⑫ REC

⑥

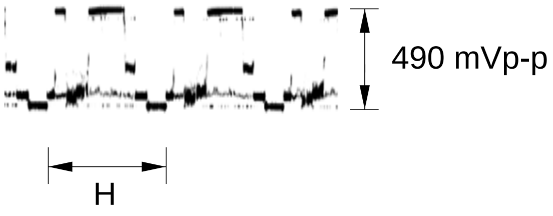


IC951 ⑩ REC

Waveforms of the VC-305 board are not shown.
Pages from 4-82 to 4-85 are not shown.

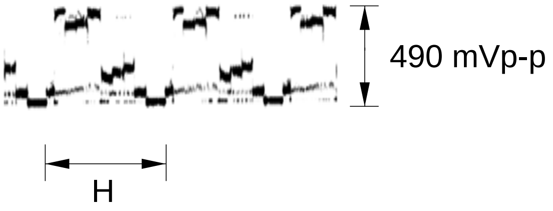
PD-180 BOARD (1/2)

①



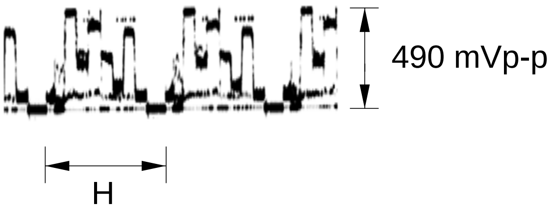
IC5501 ㊽ REC/PB

②



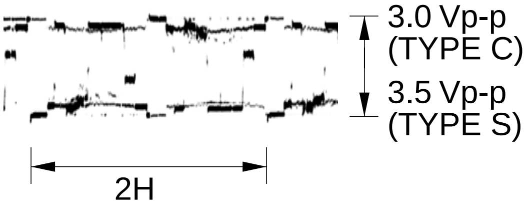
IC5501 ㊼ REC/PB

③



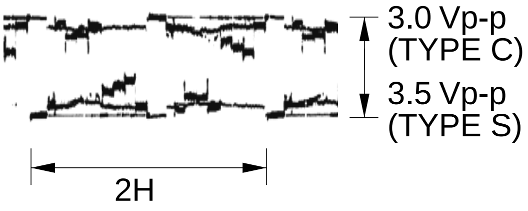
IC5501 ㊻ REC/PB

④



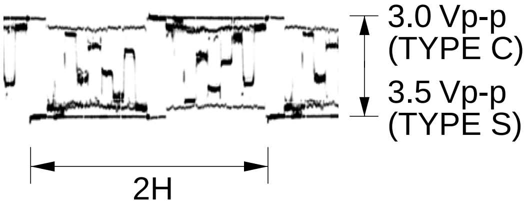
IC5501 ⑳ REC/PB

⑤



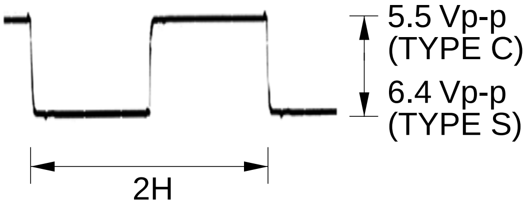
IC5501 ㉒ REC/PB

⑥



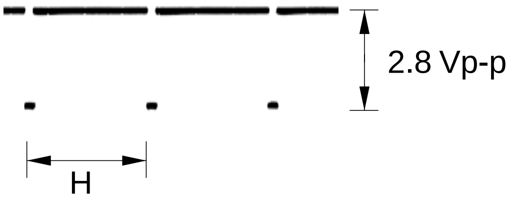
IC5501 ㉔ REC/PB

⑦



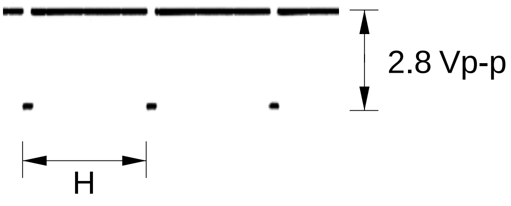
IC5501 ㉗ REC/PB

⑧



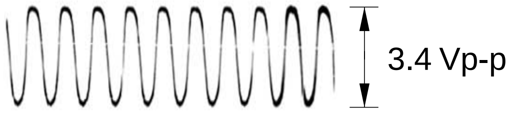
IC5502 ① REC/PB

⑨



IC5502 ② REC/PB

⑩



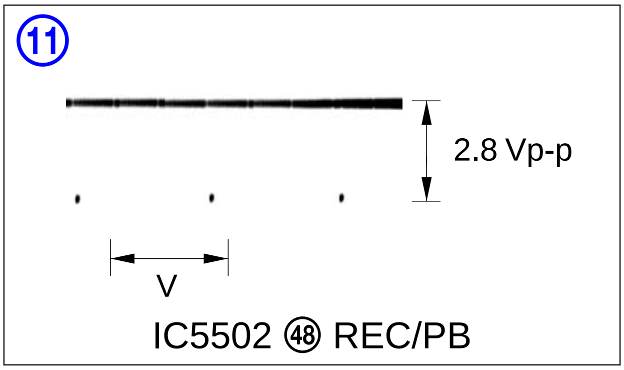
TYPE C: 12.0 MHz
TYPE S: 11.6 MHz

IC5502 ㉖ REC/PB

COVER

PD-180 BOARD SIDE A | PD-180 BOARD SIDE B

PD-180 BOARD (2/2)



Mounted parts location of the VC-305 board is not shown.
Pages from 4-88 to 4-89 are not shown.

4-5. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

PD-180 BOARD

C5503	C-2
C5504	C-4
C5505	C-3
C5506	C-3
C5507	C-3
C5509	B-2
C5510	C-3
C5511	C-4
C5512	C-4
C5513	B-3
C5514	C-2
C5515	C-4
C5516	B-4
C5517	B-3
C5518	B-3
C5519	B-3
C5520	C-2
C5521	B-5
C5524	A-5
C5527	C-3
C5528	B-4
C5530	A-5
C5531	A-5
C5603	A-3
C5604	C-5
C5605	C-5
C5606	A-1
C5607	A-4
CN5501	A-5
CN5502	B-2
CN5601	A-1
CN5701	B-1
CN5702	D-1
D5502	B-4
D5503	A-4
D5601	C-5
IC5501	C-3
IC5502	C-4
IC5601	D-5
IC5602	C-5
L5501	C-2
L5503	B-4
L5601	A-4
L5602	A-3
Q5502	B-5
Q5503	B-5
Q5504	B-5
Q5505	B-5
Q5601	C-5
Q5602	A-3
R5501	C-3
R5503	C-3
R5505	C-3
R5506	C-4
R5507	C-4
R5508	C-4
R5509	C-4
R5510	C-4
R5511	C-4
R5512	C-4
R5513	B-4
R5514	B-4
R5515	B-4
R5516	C-3
R5517	C-5
R5518	C-5
R5519	C-5
R5520	B-4
R5521	C-5
R5522	B-3
R5525	A-4
R5528	B-5
R5529	B-5
R5530	B-5
R5531	C-3
R5532	B-5
R5533	B-5
R5534	C-4
R5540	B-5
R5541	A-5
R5542	B-2
R5543	B-1
R5544	C-4
R5545	C-5
R5602	C-5
R5603	C-5
R5606	C-5
R5607	C-5
R5610	A-3
RB5501	B-3
RB5502	B-5
RB5503	B-5
RB5601	C-5
T5601	A-2

SI-035 BOARD

	C751	B-2
*	C752	C-1
	C755	C-2
	CN751	A-1
	CN753	C-1
	CN754	C-2
	D752	C-2
	D753	C-2
*	D754	C-1
	FB753	C-1
	IC751	C-2
	L751	D-2
	Q751	B-3
	Q752	C-2
	Q753	D-1
*	R754	C-2
*	R755	C-2
	R756	C-3
	R757	B-3
	R760	C-2
*	R761	C-1
*	SE751	B-1
*	SE752	B-2
	VDR751	B-1

COVER

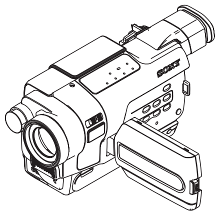
NOTE

5. REPAIR PARTS LIST

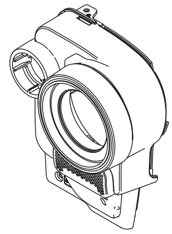
NOTE: Characters A to L of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link

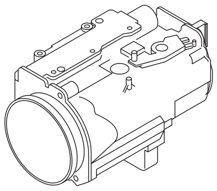
EXPLODED VIEWS


A

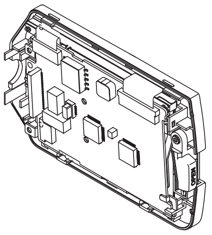
OVERALL ASSEMBLY


B

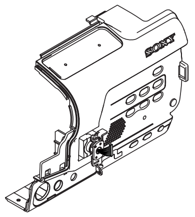
F PANEL BLOCK ASSEMBLY


C

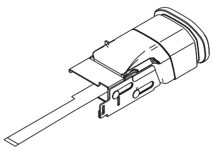
LENS BLOCK ASSEMBLY


D

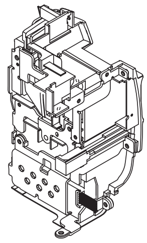
LCD BLOCK ASSEMBLY


E

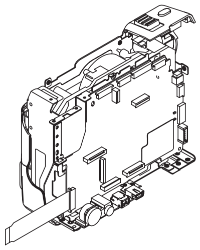
CABINET (R) BLOCK ASSEMBLY


F

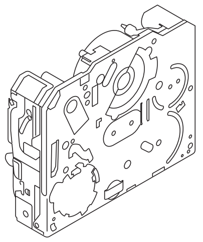
EVF BLOCK ASSEMBLY


G

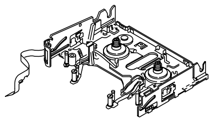
BATTERY PANEL BLOCK ASSEMBLY


H

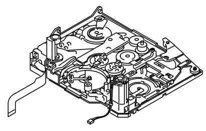
MD FRAME BLOCK


I

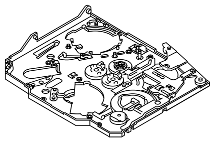
CASSETTE COMPARTMENT ASSEMBLY, DRUM ASSEMBLY


J

LS CHASSIS BLOCK ASSEMBLY


K

MECHANICAL CHASSIS BLOCK ASSEMBLY-1


L

MECHANICAL CHASSIS BLOCK ASSEMBLY-2

Link

ELECTRICAL PARTS LIST

ACCESSORIES

CD-418 BOARD	C	FP-302 FLEXIBLE BOARD	J	PD-180 BOARD (TYPE C)	D
FP-300 FLEXIBLE BOARD	J	LB-083 BOARD	F	PD-180 BOARD (TYPE S)	D
FP-301 FLEXIBLE BOARD	J	LS-057 BOARD	J	SI-035 BOARD	B

SECTION 5
REPAIR PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: μF
- COILS
  uH: μH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...
- Abbreviation
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  JE : Tourist model
  KR : Korean model
  NE : North European model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

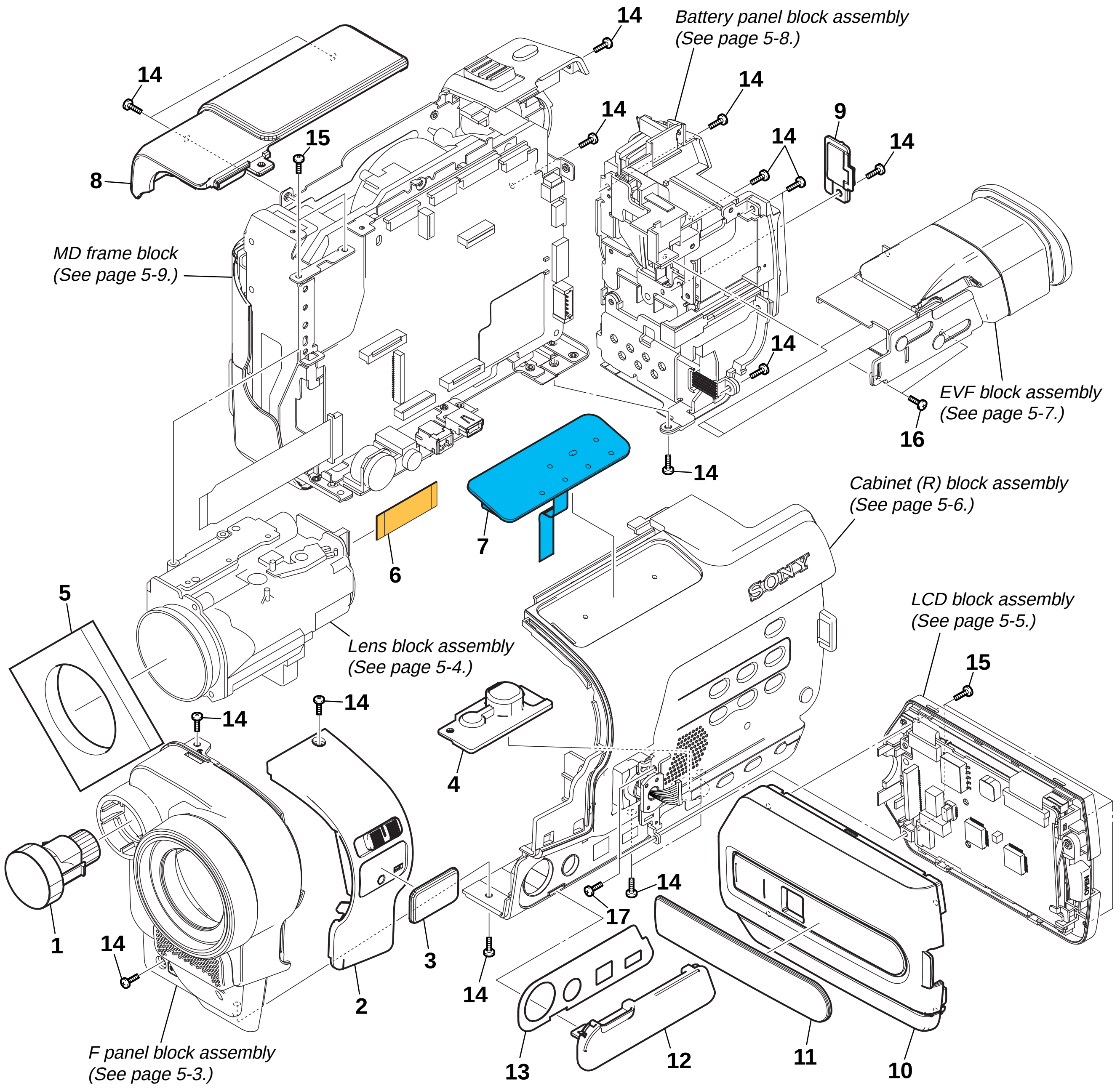
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

COVER

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

5-1-1. OVERALL ASSEMBLY


14
Battery panel block assembly
(See page 5-8.)
14
14
14
15
9
14
14
8
MD frame block
(See page 5-9.)
14
EVF block assembly
(See page 5-7.)
16
14
Cabinet (R) block assembly
(See page 5-6.)
7
6
5
LCD block assembly
(See page 5-5.)
Lens block assembly
(See page 5-4.)
15
14
14
4
14
17
1
14
3
14
2
13
12
11
10
F panel block assembly
(See page 5-3.)

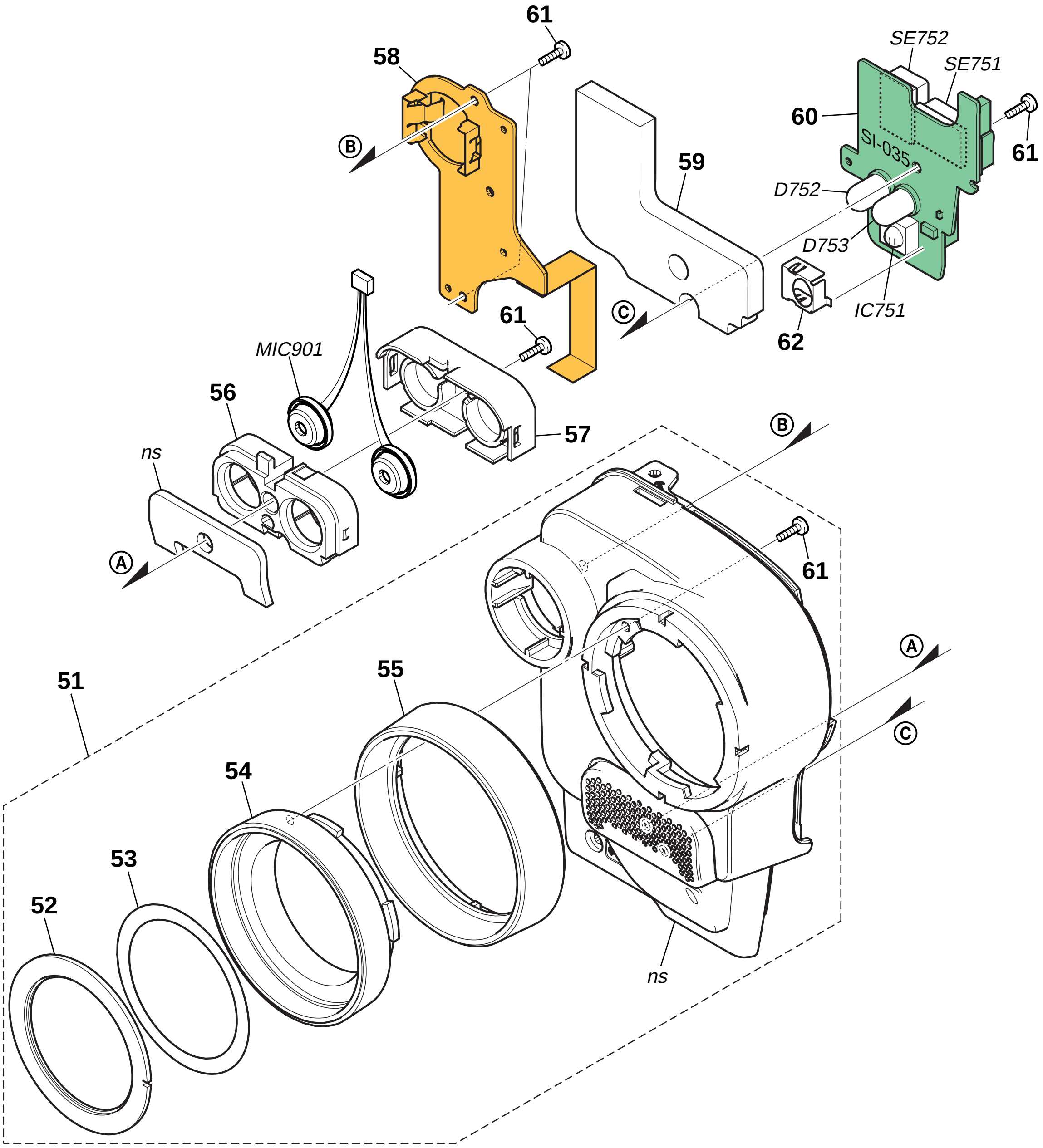
Ref. No.	Part No.	Description
1	1-518-787-21	LIGHT, VIDEO
2	X-3953-065-1	RING (33) ASSY, ORNAMENTAL
3	3-079-010-21	PLATE (30), MAGNIFICATION
4	3-079-012-01	SCREW (30), TRIPOD
5	3-080-217-01	CUSHION (30), LENS
6	1-683-163-21	FP-400 FLEXIBLE BOARD
7	1-477-672-31	SWITCH BLOCK, CONTROL (FK-3000)
8	3-079-011-01	CABINET UPPER (30)
9	3-079-007-01	LID (30), CPC
10	3-079-492-12	CABINET (C) (36), P
11	X-3952-975-1	COVER (33) ASSY, CPC
12	3-079-008-01	COVER (30), JACK
13	3-079-396-42	SHEET (30), JACK
14	3-067-347-01	MI SCREW M2 (H)
15	3-065-567-11	TAPPING (M1.7)
16	3-078-889-11	SCREW (M1.7)
17	3-065-567-01	TAPPING (M1.7)

COVER

5. REPAIR PARTS LIST

5-1-2. F PANEL BLOCK ASSEMBLY

ns: not supplied

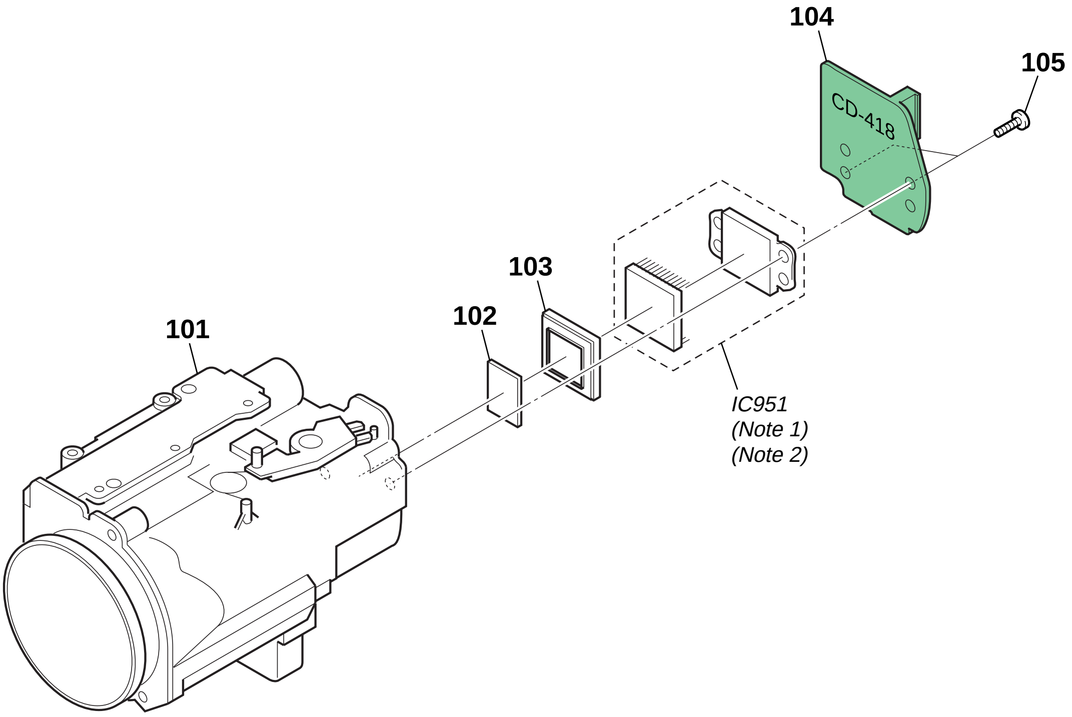

61
58
B
SE752
SE751
60
SI-035
61
59
D752
D753
IC751
62
61
C
MIC901
56
57
ns
A
B
61
51
55
A
C
54
53
52
ns

Ref. No.	Part No.	Description
51	X-3952-974-2	PANEL (33) ASSY, FRONT
52	3-079-000-01	PLATE (30), NAME
53	3-079-001-01	SHEET (30), ADHESIVE, PLATE
54	3-078-999-01	SCREW (30), FILTER
55	3-079-002-01	RING (30), FRONT
56	3-078-997-11	HOLDER (30), MICROPHONE
57	3-078-996-01	RETAINER (30), MICROPHONE
58	1-686-853-21	FP-569 FLEXIBLE BOARD
59	3-080-231-01	SHEET (30), MICROPHONE

Ref. No.	Part No.	Description
60	A-7013-267-A	SI-035 BOARD, COMPLETE
61	3-065-567-01	TAPPING (M1.7)
62	3-079-004-01	CASE (30), SHIELD, SI
D752	8-719-060-65	DIODE DCC3810 (IR EMITTER)
D753	8-719-060-65	DIODE DCC3810 (IR EMITTER)
IC751	6-701-681-01	IC RPM7140-V4
MIC901	1-542-477-11	MICROPHONE
SE751	1-803-042-31	SENSOR, ANGULAR VELOCITY (PITCH)
SE752	1-803-042-41	SENSOR, ANGULAR VELOCITY (YAW)

COVER

5-1-3. LENS BLOCK ASSEMBLY



(Note 1) Be sure to read “Precuations for Replacement of CCD Imager” on page 4-8 when changing the CCD imager.

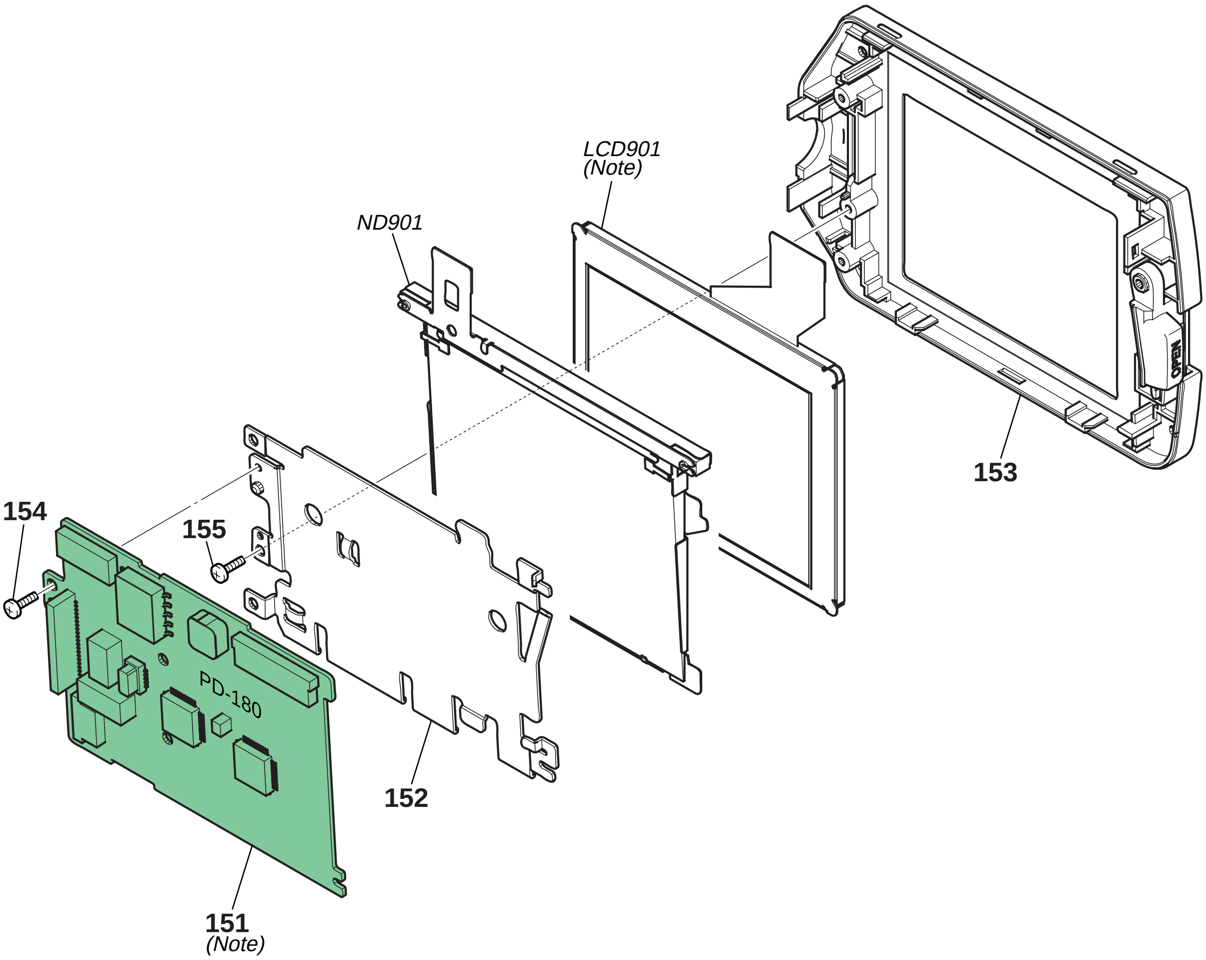
(Note 2) About VC-305 board and CCD imager, discriminate CCD type on the machine referring to page 1-4, and replace the same type.

Ref. No.	Part No.	Description
101	8-848-765-01	DEVICE, LENS LSV-820A
102	1-758-554-11	FILTER BLOCK, OPTICAL
103	3-053-973-01	RUBBER (W), SEAL
104	A-7013-263-A	CD-418 BOARD, COMPLETE
105	3-065-567-01	TAPPING (M1.7)

Ref. No.	Part No.	Description
IC951	A-7013-400-A	CCD BLOCK ASSY (CCD IMAGER) (TYPE PA) (Note 1) (Note 2)
IC951	A-7016-724-A	CCD BLOCK ASSY (CCD IMAGER) (TYPE SO) (Note 1) (Note 2)

5. REPAIR PARTS LIST

5-1-4. LCD BLOCK ASSEMBLY



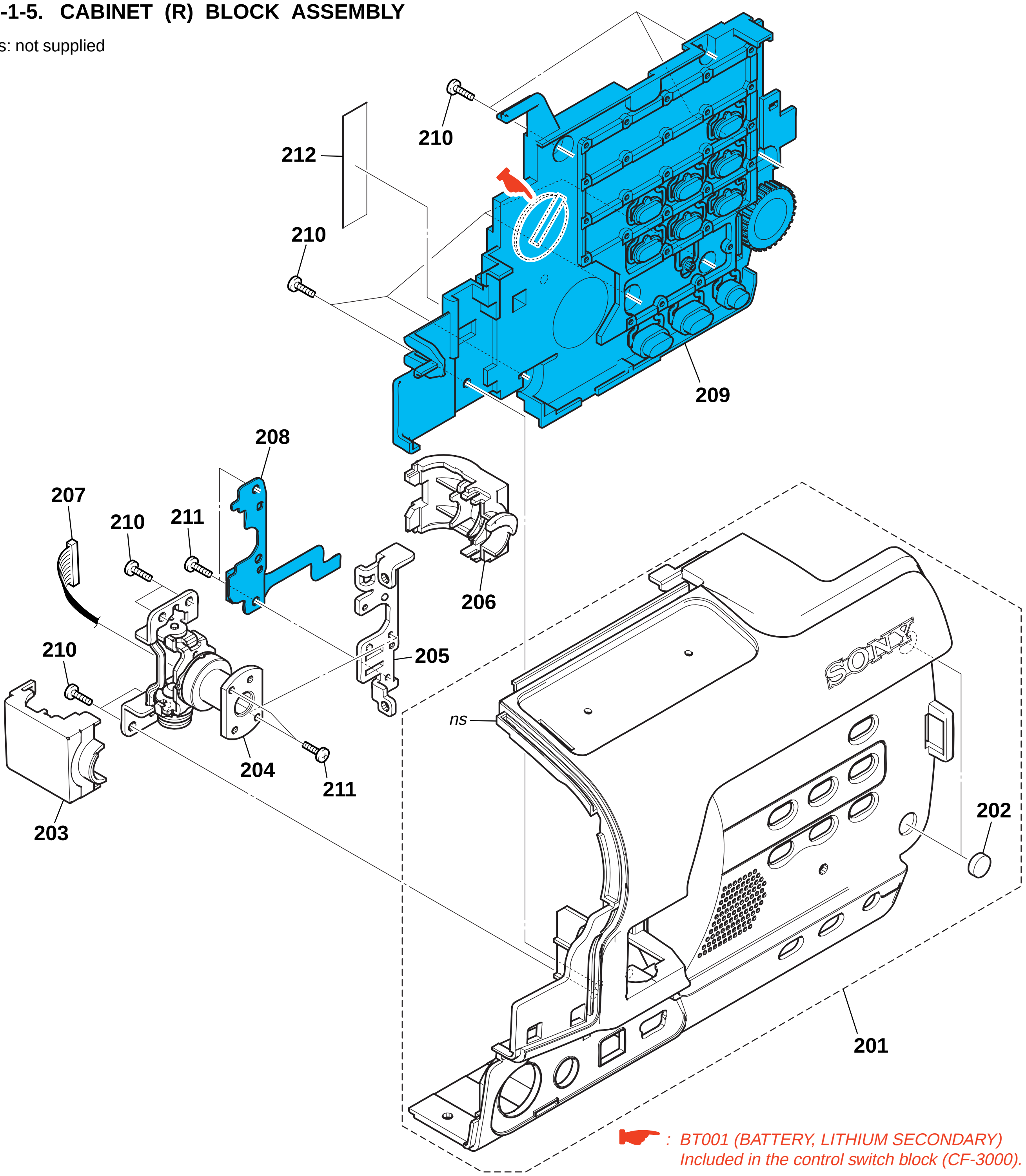
(Note) About PD-180 board and LCD module, discriminate LCD type on the machine referring to page 1-4, and replace the same type.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description
151	A-7013-265-A	PD-180 BOARD, COMPLETE (TYPE C) (Note 2)
151	A-7013-266-A	PD-180 BOARD, COMPLETE (TYPE S) (Note 2)
152	3-079-032-01	FRAME (30), P
153	X-3952-955-2	CABINET (M) (30) ASSY, P
154	3-078-889-11	SCREW (M1.7)
155	3-065-567-11	TAPPING (M1.7)
LCD901	1-805-137-21	INDICATOR MODULE LIQUID CRYSTAL (TYPE S) (Note)
LCD901	1-805-138-21	INDICATOR MODULE LIQUID CRYSTAL (TYPE C) (Note)
⚠ND901	1-518-798-22	TUBE, FLUORESCENT, COLD CATHODE

5-1-5. CABINET (R) BLOCK ASSEMBLY

ns: not supplied

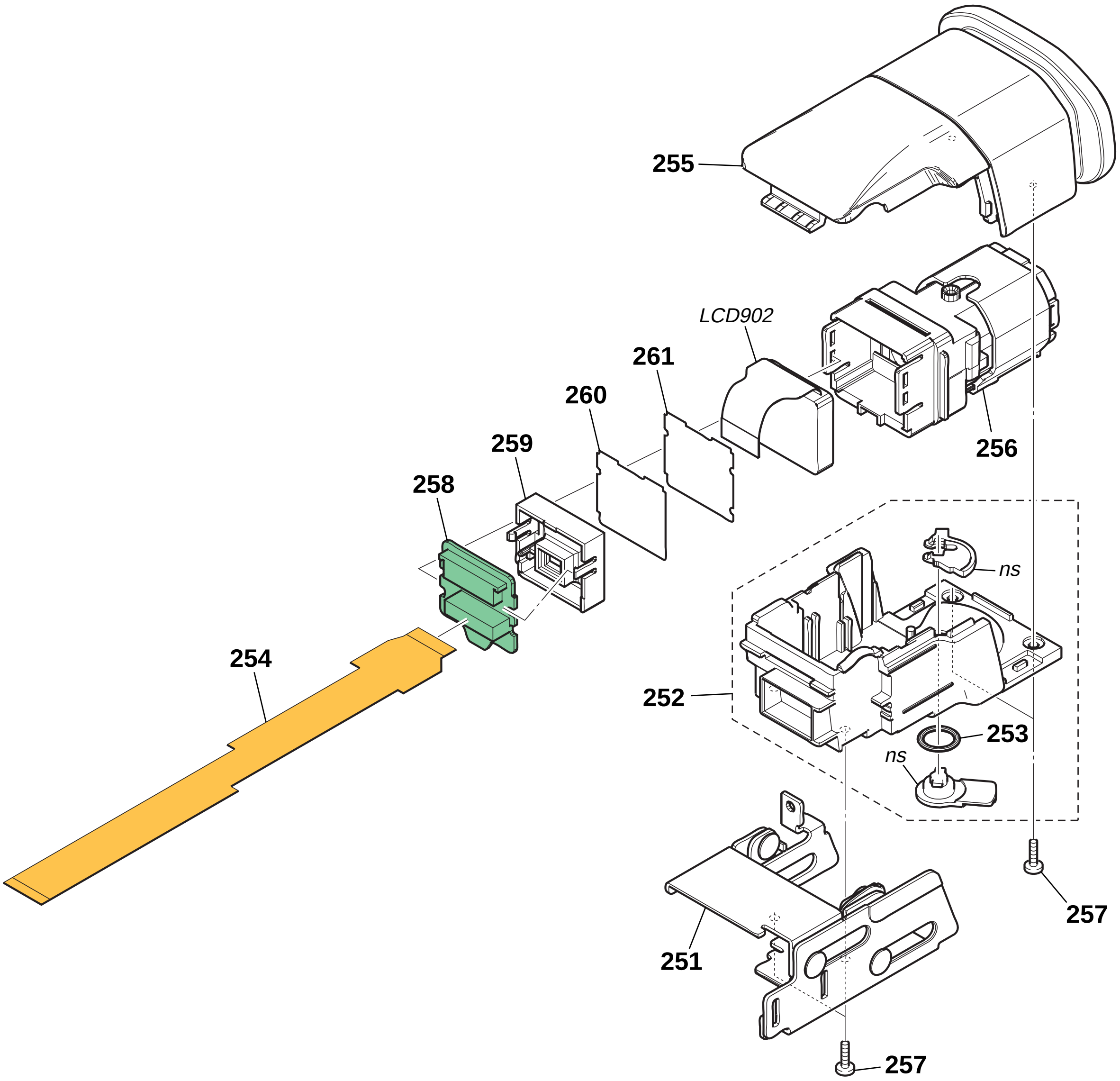

210
212
210
209
208
207
210
211
206
210
205
ns
SONY
202
204
211
203
201

: BT001 (BATTERY, LITHIUM SECONDARY)
Included in the control switch block (CF-3000).

Ref. No.	Part No.	Description
201	X-3953-038-2	CABINET (R) (33) ASSY
202	3-959-978-02	CUSHION, PANEL
203	3-079-059-11	COVER (C) (30), HINGE
204	X-3952-973-1	HINGE (30) ASSY
205	3-079-057-01	BRACKET (30), HINGE
206	3-079-058-01	COVER (M) (30), HINGE
207	1-961-989-11	HARNESS (PD-118)
208	1-477-675-11	SWITCH BLOCK, CONTROL (PR-3000)
209	1-477-673-21	SWITCH BLOCK, CONTROL (CF-3000)
210	3-080-205-21	SCREW, TAPPING, P2
211	3-989-735-41	SCREW (M1.7), LOCK ACE, P2
212	3-941-343-21	TAPE (A)

5-1-6. EVF BLOCK ASSEMBLY

ns: not supplied

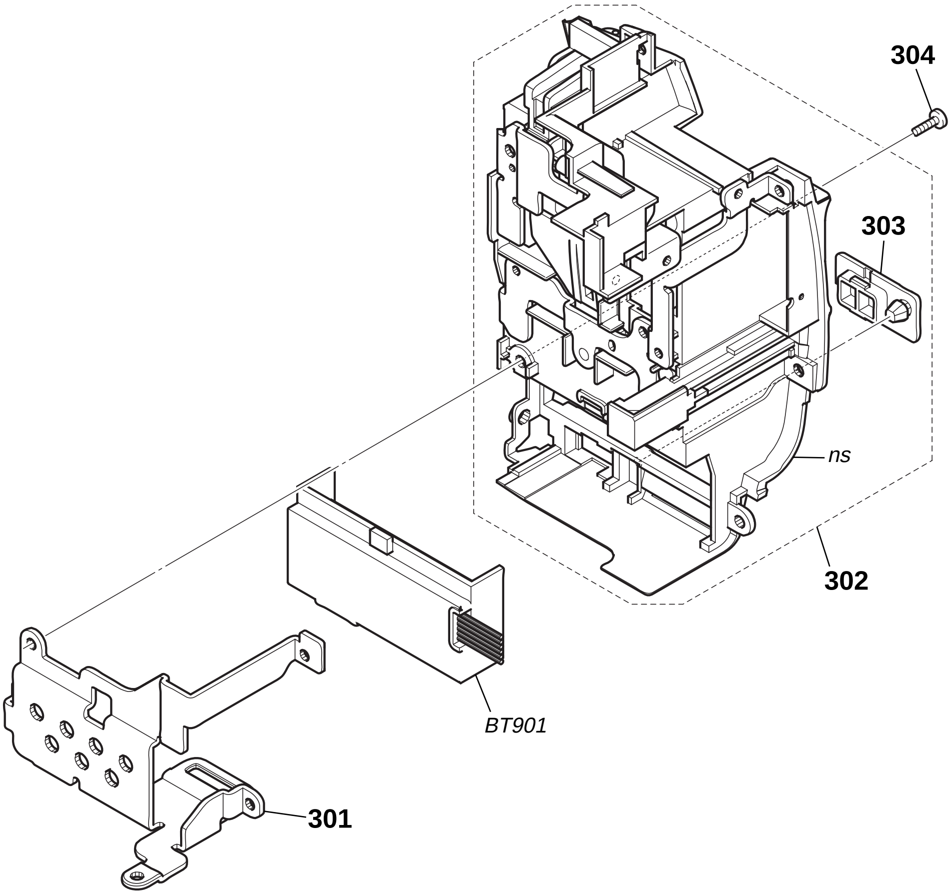

255
LCD902
261
260
259
258
256
ns
254
252
253
ns
257
251
257

Ref. No.	Part No.	Description
251	X-3952-968-3	HINGE (30) ASSY, VF
252	X-3952-969-1	CABINET (LOWER) (30) ASSY, EVF
253	3-950-044-01	RING, O
254	1-686-854-11	FP-571 FLEXIBLE BOARD
255	X-3952-957-2	CABINET (UPPER) (30) ASSY, EVF
256	X-3952-214-2	LENS (B) ASSY, VF

Ref. No.	Part No.	Description
257	3-065-567-01	TAPPING (M1.7)
258	A-7013-271-A	LB-083 BOARD, COMPLETE
259	3-065-058-02	GUIDE, LAMP
260	3-072-211-01	ILLUMINATOR
261	3-072-210-01	SHEET, PRISM
LCD902	8-753-028-49	LCX032AP-5

5-1-7. BATTERY PANEL BLOCK ASSEMBLY

ns: not supplied



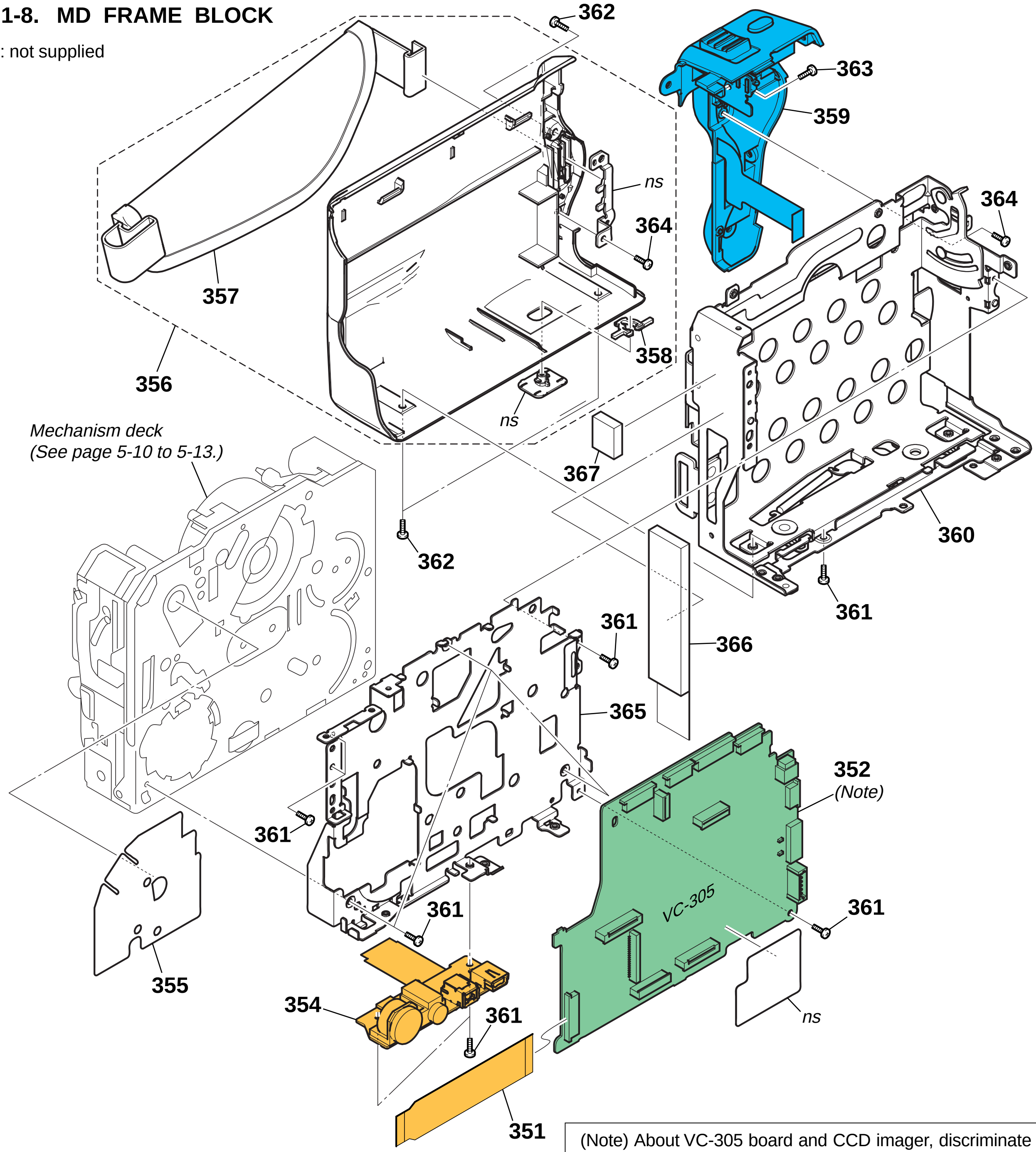
Ref. No.	Part No.	Description
301	3-079-039-03	SHEET METAL (LOWER), STRAP (30)
302	X-3952-954-1	PANEL (30) ASSY, BATTERY
303	3-072-305-01	LID (2500), JACK

Ref. No.	Part No.	Description
304	3-067-347-01	MI SCREW M2 (H)
BT901	1-694-772-11	TERMINAL BOARD, BATTERY

5. REPAIR PARTS LIST

5-1-8. MD FRAME BLOCK

ns: not supplied

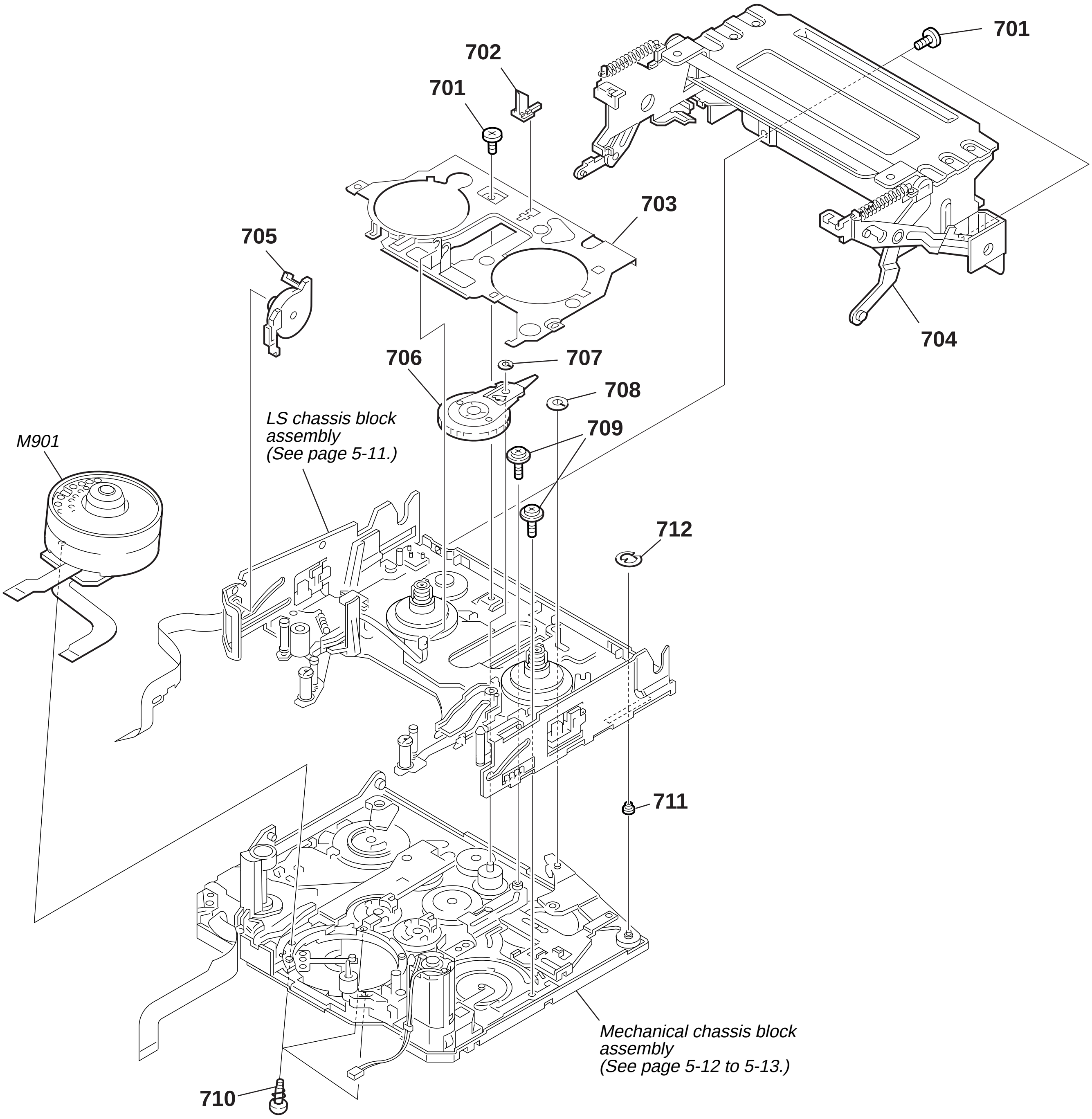

362
363
359
364
ns
364
357
358
356
ns
Mechanism deck
(See page 5-10 to 5-13.)
367
360
362
361
361
366
365
352
(Note)
VC-305
361
361
361
355
354
361
ns
351

(Note) About VC-305 board and CCD imager, discriminate CCD type on the machine referring to page 1-4, and replace the same type.

Ref. No.	Part No.	Description
351	1-688-456-11	FP-762 FLEXIBLE BOARD
352	A-7016-735-A	VC-305 BOARD, COMPLETE (SERVICE) (TYPE PA) (Note)
352	A-7016-737-A	VC-305 BOARD, COMPLETE (SERVICE) (TYPE SO) (Note)
354	1-686-862-21	FP-577 FLEXIBLE BOARD
355	3-066-169-01	SHEET (30), MD
356	X-3953-081-2	CABINET (L) (33) ASSY
357	3-052-815-01	BELT (ES), GRIP
358	3-978-765-01	SLIDER, G LOCK
359	1-477-674-31	SWITCH BLOCK, CONTROL (SS-3000)
360	X-3952-970-2	FRAME ASSY (30), CS
361	3-078-889-11	SCREW (M1.7)
362	3-067-347-01	MI SCREW M2 (H)
363	3-080-221-21	SCREW (M2), ES LOCK
364	3-065-567-01	TAPPING (M1.7)
365	3-079-006-01	FRAME (30), MD
366	3-079-176-02	COVER , MD (30)
367	3-081-243-02	SHEET (LT), RADIATION

5. REPAIR PARTS LIST

5-1-9. CASSETTE COMPARTMENT ASSEMBLY, DRUM ASSEMBLY


701
702
701
703
705
704
706
707
708
709
712
M901
LS chassis block assembly (See page 5-11.)
711
Mechanical chassis block assembly (See page 5-12 to 5-13.)
710

Ref. No.	Part No.	Description
701	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA
702	3-065-895-01	LEVER, REEL RELEASE
703	3-065-896-01	PLATE, BLIND
704	X-3951-298-2	CASSETTE COMPARTMENT ASSY
705	X-3951-302-1	DAMPER ASSY
706	X-3951-297-1	GEAR ASSY, R DRIVE
707	3-065-840-01	CUT (0.98X3X0.13), LUMILER (W)

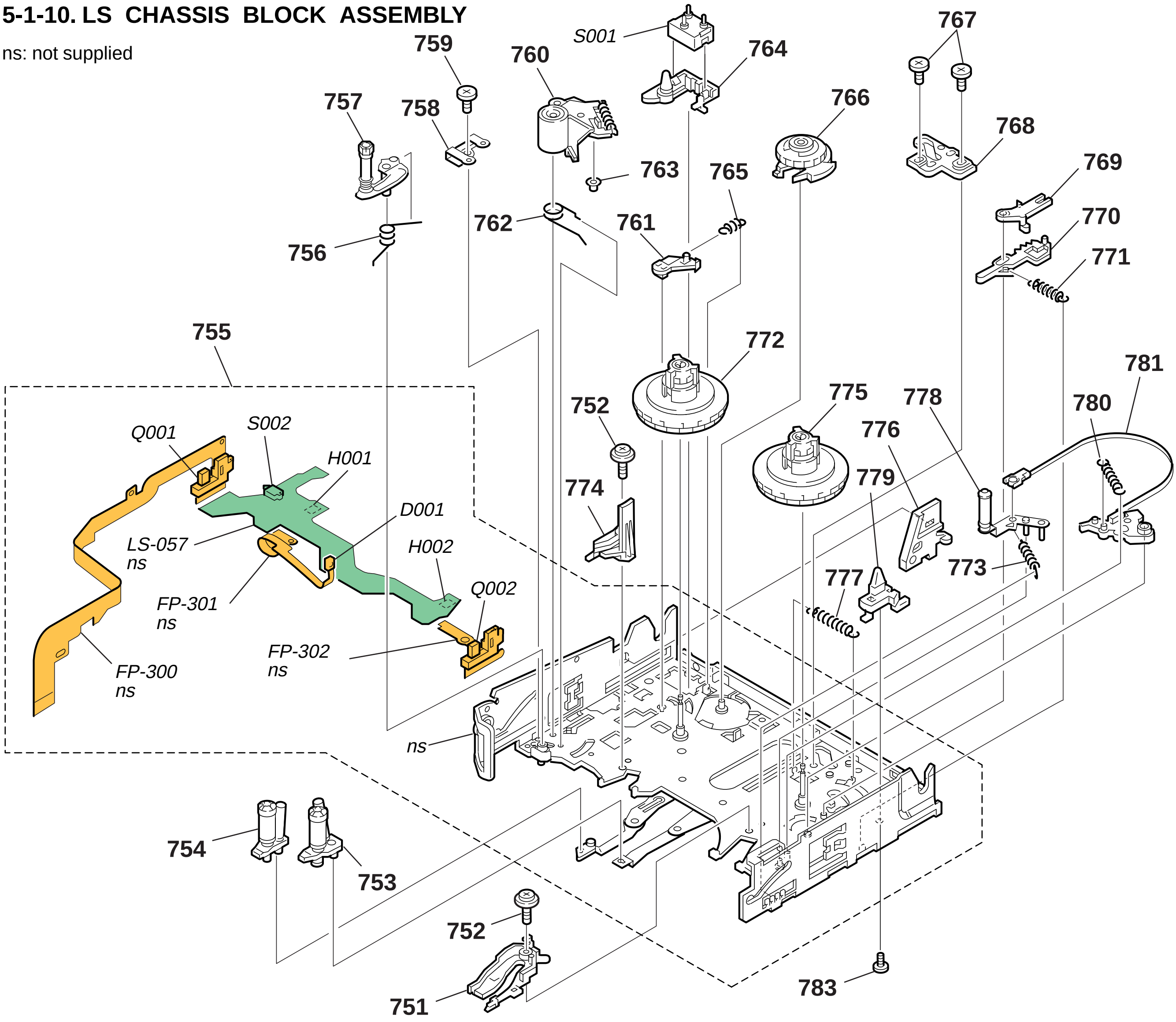
Ref. No.	Part No.	Description
708	3-065-935-01	HLC CUT 1.8X4X0.5
709	3-947-503-01	SCREW (M1.4)
710	X-3951-299-1	SCREW ASSY, DRUM FITTING
711	3-074-309-01	ROLLER A, LS GUIDE
712	7-624-101-04	STOP RING 1.2 (E TYPE)
M901	A-7048-951-A	DRUM (DKH-04A-R) (SERVICE)

COVER

5. REPAIR PARTS LIST

5-1-10. LS CHASSIS BLOCK ASSEMBLY

ns: not supplied


759
760
S001
764
767
757
758
766
768
769
763
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S002
H001
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D001
LS-057
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H002
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Q002
FP-301
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FP-302
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FP-300
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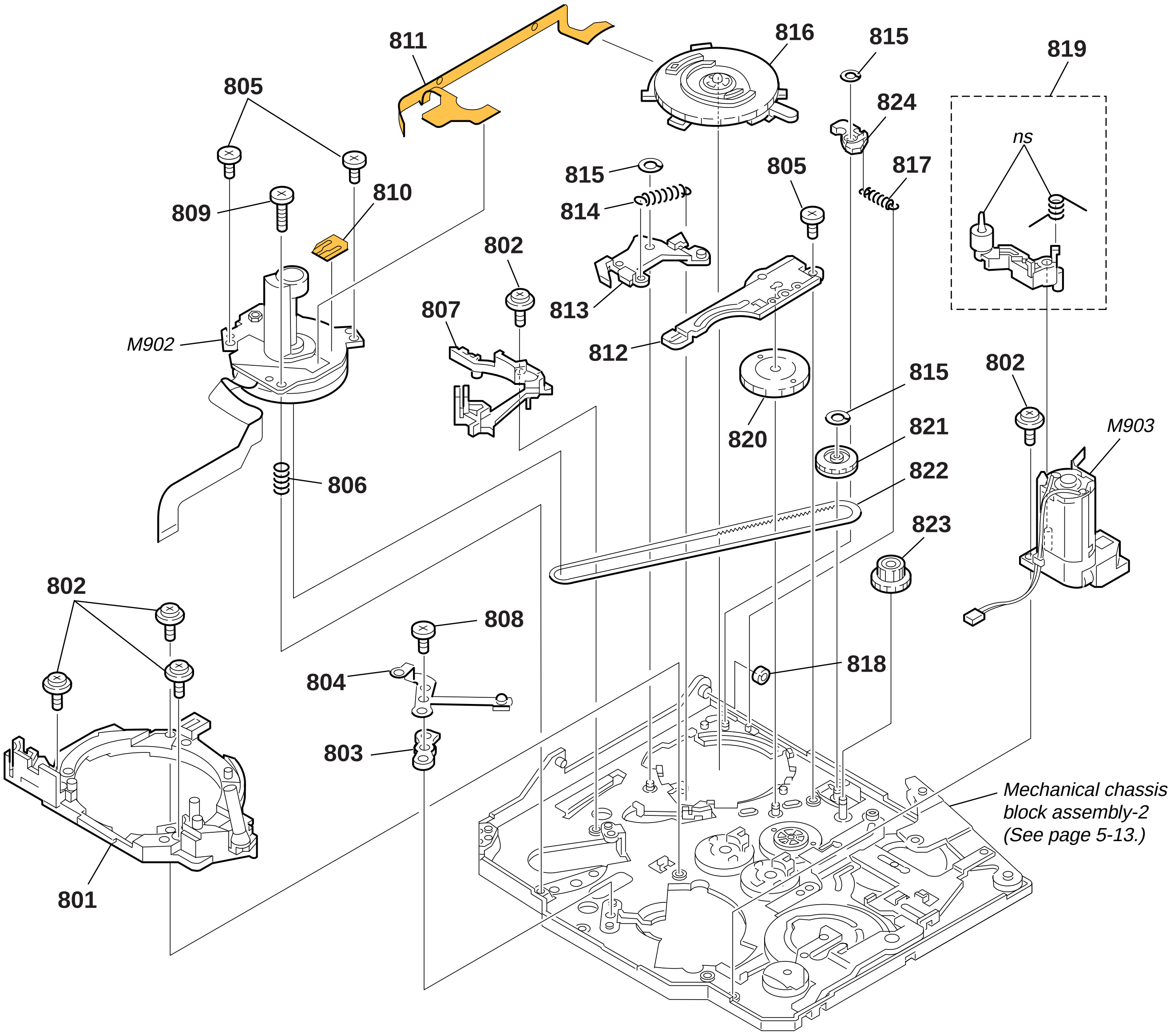
Ref. No.	Part No.	Description
751	3-065-822-02	RAIL (S), GUIDE
752	3-947-503-01	SCREW (M1.4)
753	A-7096-416-B	BASE (S) BLOCK ASSY, GUIDE
754	A-7096-415-A	BASE (T) BLOCK ASSY, GUIDE
755	A-7096-426-A	CHASSIS ASSY, LS
756	3-065-802-01	SPRING, TG7 ARM
757	A-7096-414-A	ARM BLOCK ASSY, TG7
758	3-065-801-01	RETAINER, TG7
759	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA
760	X-3951-303-1	ARM ASSY, PINCH
761	3-065-823-01	ARM, T RATCHET
762	3-065-794-01	ROAD (SPR), PINCH ARM
763	3-065-792-01	ROLLER, P LIM ARM
764	3-065-834-01	GUIDE (T), CASSETTE
765	3-065-824-01	SPRING, T RATCHET
766	A-7096-417-A	SOFT ASSY, T
767	3-071-650-01	SCREW (M1.7) (S)
768	3-065-832-01	PLATE, LS CAM
769	3-065-828-01	ARM, S RATCHET
770	3-065-829-01	PLATE, S RATCHET (RE)
771	3-065-830-01	SPRING, S RATCHET
772	X-3951-288-1	TABLE (T) ASSY, REEL
773	3-065-819-01	SPRING, TG1 ARM
774	3-065-821-01	RAIL (T), GUIDE
775	X-3951-289-1	TABLE (S) ASSY, REEL
776	3-065-833-01	GUIDE, LOCK
777	3-065-831-01	PLATE (SPR), RE RETURN
778	X-3951-304-1	ARM ASSY, TG1
779	3-065-835-01	GUIDE (S), CASSETTE
780	3-065-820-01	SPRING, RVS ARM
781	X-3951-296-1	BAND (ASSY), BT
783	3-067-167-01	SCREW (M1.4X2), CAMERA TAPPING
D001	8-719-988-42	DIODE GL453 (TAPE LED)
H001	8-719-033-37	ELEMENT, HALL HW-105C (T REEL)
H002	8-719-033-37	ELEMENT, HALL HW-105C (S REEL)
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE TOP)
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE END)
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (REC PROOF)
S002	1-572-688-11	SWITCH, PUSH LEVER (1 KEY) (C. C. LOCK)

COVER

5. REPAIR PARTS LIST

5-1-11. MECHANICAL CHASSIS BLOCK ASSEMBLY-1

ns: not supplied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M903
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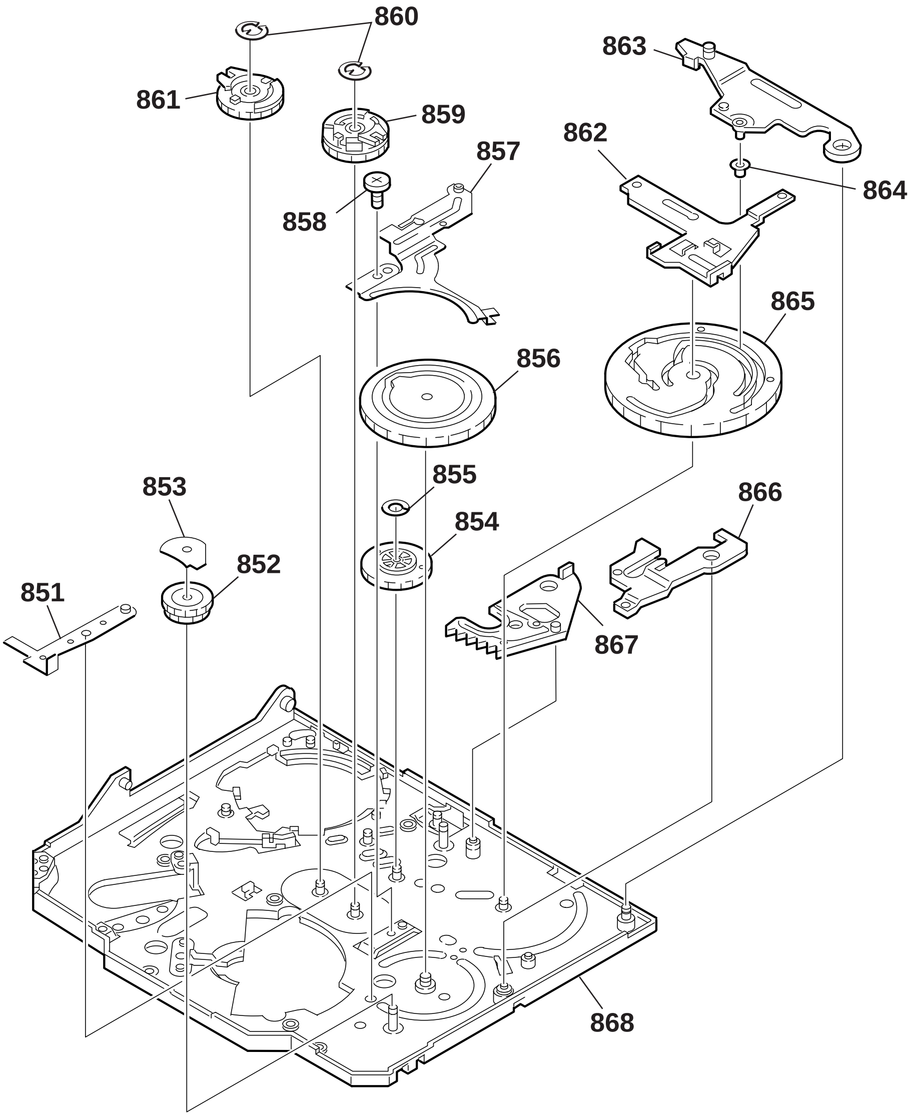
801
Mechanical chassis
block assembly-2
(See page 5-13.)

Ref. No.	Part No.	Description
801	A-7096-422-A	BASE ASSY, DRUM
802	3-947-503-01	SCREW (M1.4)
803	3-065-928-01	SPACER, GROUND
804	3-065-927-01	GROUND, DRUM
805	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA
806	3-067-154-01	SPRING, CAPSTAN
807	3-065-931-01	RAIL (T2), GUIDE
808	X-3947-398-1	SCREW ASSY, M1.7 PW
809	3-065-933-01	PAN (2 MAIN 1.4X4.5), CAMERA
810	1-677-049-11	PWB, FP-228 FLEXIBLE
811	1-680-434-11	PWB, FP-299 FLEXIBLE
812	3-065-877-01	PLATE (T), GUIDE LOCK
813	X-3951-301-1	PLATE ASSY, PINCH PRESSURE
814	3-065-881-01	SPRING, P PRESSURE PLATE
815	3-065-934-01	HLW CUT 0.98X3X0.25
816	1-786-096-11	SWITCH, ROTARY
817	3-065-898-01	SPRING, EJECT ARM
818	3-065-870-01	ROLLER, LS GUIDE
819	A-7096-421-A	ARM ASSY, HCL
820	3-065-918-01	GEAR (2), CAM RELAY
821	A-7096-419-A	GEAR ASSY, CHANGE
822	3-065-902-01	BELT, TIMING
823	3-065-905-01	GEAR, RELAY
824	3-065-882-01	ARM, EJECT
M902	8-835-701-01	MOTOR, DC SCE13A/C-NP (CAPSTAN)
M903	A-7096-420-A	MOTOR ASSY, LD (LOADING)

5. REPAIR PARTS LIST

5-1-12. MECHANICAL CHASSIS BLOCK ASSEMBLY-2



Ref. No.	Part No.	Description
851	3-065-920-01	ARM, HC DRIVE
852	3-065-913-01	GEAR (4), LD
853	3-065-914-01	SHEET, COVER
854	3-065-917-01	GEAR (1), CAM RELAY
855	3-065-934-01	HLW CUT 0.98X3X0.25
856	3-065-915-01	GEAR (1), CAM
857	3-065-878-01	PLATE (S), GUIDE LOCK
858	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA
859	A-7096-413-A	GEAR (S) ASSY, GUIDE

Ref. No.	Part No.	Description
860	7-624-101-04	STOP RING 1.2 (E TYPE)
861	A-7096-412-A	GEAR (T) ASSY, GUIDE
862	X-3951-307-1	PLATE ASSY, M SLIDE
863	X-3951-305-1	ARM ASSY, LS
864	3-065-901-01	ROLLER, LS ARM
865	3-065-916-01	GEAR (2), CAM
866	3-065-919-01	ARM, T1 LIMITTER
867	X-3951-308-1	ARM ASSY, GL
868	X-3951-300-2	CHASSIS ASSY, MECHANICAL

CD-418 **FP-300** **FP-301** **FP-302** **LB-083** **LS-057** **PD-180 (TYPE C)**

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description			
	A-7013-263-A	CD-418 BOARD, COMPLETE			
		************************			
		(IC951 is not included in this complete board.)			
		< CAPACITOR >			
C951	1-126-395-11	ELECT	22uF	20%	16V
C953	1-128-994-21	ELECT CHIP	47uF	20%	10V
C955	1-164-360-11	CERAMIC CHIP	0.1uF		16V
		< CONNECTOR >			
CN951	1-779-331-11	CONNECTOR, FFC/FPC 14P			
		< IC >			
IC951	A-7013-400-A	CCD BLOCK ASSY (CCD IMAGER) (Note) (TYPE PA)			
IC951	A-7016-724-A	CCD BLOCK ASSY (CCD IMAGER) (Note) (TYPE SO)			
		< COIL >			
L951	1-469-528-91	INDUCTOR	100uH		
		< TRANSISTOR >			
Q951	8-729-117-73	TRANSISTOR	2SC4178-F14		
		< RESISTOR >			
R952	1-218-940-11	RES-CHIP	82	5%	1/16W
R953	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R961	1-218-990-11	SHORT CHIP	0		
R963	1-218-990-11	SHORT CHIP	0		
R965	1-218-990-11	SHORT CHIP	0		
		FP-300 FLEXIBLE BOARD (Not Supplied)			
		*********************			
		< PHOTO TRANSISTOR >			
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE TOP)			
		FP-301 FLEXIBLE BOARD (Not Supplied)			
		*********************			
		< DIODE >			
D001	8-719-988-42	DIODE GL453 (TAPE LED)			
		FP-302 FLEXIBLE BOARD (Not Supplied)			
		*********************			
		< PHOTO TRANSISTOR >			
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE END)			

Ref. No.	Part No.	Description			
	A-7013-271-A	LB-083 BOARD, COMPLETE			
		***********************			
		< CAPACITOR >			
C701	1-164-505-11	CERAMIC CHIP	2.2uF		16V
		< CONNECTOR >			
CN701	1-779-334-11	CONNECTOR, FFC/FPC 20P			
CN702	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P			
		< DIODE >			
D701	8-719-082-33	DIODE NSCW100-T38 (BACKLIGHT)			
D702	6-500-506-01	DIODE TLRMV1021 (T15SOY, F) (TALLY)			
		< IC >			
IC701	8-759-581-11	IC NJM2125F (TE2)			
		< TRANSISTOR >			
Q701	8-729-054-48	TRANSISTOR	UP04601008S0		
		< RESISTOR >			
R701	1-208-941-11	METAL CHIP	180K	0.5%	1/16W
R702	1-208-719-11	METAL CHIP	33K	0.5%	1/16W
R703	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R704	1-211-977-11	METAL CHIP	22	0.5%	1/10W
		LS-057 BOARD (Not Supplied)			
		*************			
		< HALL ELEMENT >			
H001	8-719-033-37	ELEMENT, HALL HW-105C (T RELL)			
H002	8-719-033-37	ELEMENT, HALL HW-105C (S RELL)			
		< SWITCH >			
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (REC PROOF)			
S002	1-572-688-11	SWITCH, PUSH LEVER (1 KEY) (C.C LOCK)			
	A-7013-265-A	PD-180 BOARD, COMPLETE (TYPE C)			
		************************			
		< CAPACITOR >			
C5503	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C5504	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5505	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5506	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5507	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5509	1-110-457-11	ELECT CHIP	3.3uF	20%	25V
C5510	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5511	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C5512	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5513	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5514	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C5515	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5516	1-164-874-11	CERAMIC CHIP	100PF	5%	50V

(Note) Be sure to read “Precautions for Replacement of CCD Imager” on page 4-8 when changing the CCD imager.

Ref. No.	Part No.	Description			
C5517	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5518	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5519	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5520	1-115-407-11	ELECT CHIP	10uF	20%	16V
C5521	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C5524	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C5527	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5603	1-164-657-11	CERAMIC CHIP	0.015uF	10%	50V
C5604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5605	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
⚠C5606	1-100-371-11	CERAMIC CHIP	12PF	5%	3.15KV
C5607	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
		< CONNECTOR >			
CN5501	1-815-031-11	CONNECTOR, FFC/FPC (ZIF) 24P			
* CN5502	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P			
CN5601	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
CN5701	1-794-998-31	PIN, CONNECTOR 20P			
CN5702	1-816-176-11	CONNECTOR, FFC/FPC (ZIF) 6P			
		< DIODE >			
D5502	8-719-084-47	DIODE 1SV290 (TPL3)			
D5601	8-719-988-61	DIODE 1SS355TE-17			
		< IC >			
IC5501	8-752-102-40	IC CXA3592R-T4			
IC5502	8-759-833-18	IC CM7021L3-E2			
IC5601	8-759-564-49	IC TC7W53FU (TE12R)			
IC5602	8-759-075-70	IC TA75S393F			
		< COIL >			
L5501	1-469-526-91	INDUCTOR	22uH		
L5503	1-412-949-21	INDUCTOR	6.8uH		
L5601	1-428-878-11	INDUCTOR	82uH		
L5602	1-412-056-11	INDUCTOR	4.7uH		
		< TRANSISTOR >			
Q5601	6-550-234-01	TRANSISTOR	UNR32A300LS0		
Q5602	6-550-083-01	TRANSISTOR	TPC6C01 (TE85R)		
		< RESISTOR >			
R5501	1-218-985-11	RES-CHIP	470K	5%	1/16W
R5503	1-208-933-11	METAL CHIP	82K	0.5%	1/16W
R5505	1-218-967-11	RES-CHIP	15K	5%	1/16W
R5506	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R5507	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5508	1-218-975-11	RES-CHIP	68K	5%	1/16W
R5509	1-218-969-11	RES-CHIP	22K	5%	1/16W
R5510	1-218-975-11	RES-CHIP	68K	5%	1/16W
R5511	1-218-989-11	RES-CHIP	1M	5%	1/16W
R5512	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5514	1-218-990-11	SHORT CHIP	0		
R5516	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R5517	1-218-978-11	RES-CHIP	120K	5%	1/16W
R5518	1-218-990-11	SHORT CHIP	0		
R5520	1-218-990-11	SHORT CHIP	0		
R5521	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5522	1-218-959-11	RES-CHIP	3.3K	5%	1/16W

Ref. No.	Part No.	Description			
R5525	1-218-990-11	SHORT CHIP	0		
R5528	1-218-990-11	SHORT CHIP	0		
R5529	1-218-990-11	SHORT CHIP	0		
R5530	1-218-990-11	SHORT CHIP	0		
R5534	1-218-990-11	SHORT CHIP	0		
R5542	1-414-760-21	FERRITE	0uH (Note)		
R5543	1-216-864-11	METAL CHIP	0	5%	1/10W
R5544	1-414-760-21	FERRITE	0uH (Note)		
R5602	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5603	1-218-966-11	RES-CHIP	12K	5%	1/16W
R5606	1-218-969-11	RES-CHIP	22K	5%	1/16W
R5607	1-218-949-11	RES-CHIP	470	5%	1/16W
R5610	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
		< COMPOSITION CIRCUIT BLOCK >			
RB5501	1-234-372-21	RES, NETWORK 100 x4 (1005)			
RB5601	1-234-378-21	RES, NETWORK 10K x4 (1005)			
		< TRANSFORMER >			
⚠T5601	1-435-786-31	TRANSFORMER, INVERTER			

	A-7013-266-A	PD-180 BOARD, COMPLETE (TYPE S) *************************			
		< CAPACITOR >			
C5503	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C5504	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5505	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5506	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5507	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5509	1-110-457-11	ELECT CHIP	3.3uF	20%	25V
C5510	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5511	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C5512	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5513	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5514	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C5515	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5516	1-164-870-11	CERAMIC CHIP	68PF	5%	50V
C5517	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5518	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5519	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5520	1-115-407-11	ELECT CHIP	10uF	20%	16V
C5521	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C5524	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C5527	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5528	1-125-827-91	CERAMIC CHIP	1uF	10%	25V
C5530	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5531	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C5603	1-164-657-11	CERAMIC CHIP	0.015uF	10%	50V
C5604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5605	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
⚠C5606	1-100-371-11	CERAMIC CHIP	12PF	5%	3.15KV
C5607	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
		< CONNECTOR >			
CN5501	1-815-031-11	CONNECTOR, FFC/FPC (ZIF) 24P			
* CN5502	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P			

Note: Ferrite beads are mounted to the location where R5542, R5544 are printed. (TYPE C only)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

PD-180 (TYPE S) SI-035

Ref. No.	Part No.	Description			
CN5601	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
CN5701	1-794-998-31	PIN, CONNECTOR 20P			
CN5702	1-816-176-11	CONNECTOR, FFC/FPC (ZIF) 6P			
		< DIODE >			
D5502	8-719-084-47	DIODE 1SV290 (TPL3)			
D5503	8-719-988-61	DIODE 1SS355TE-17			
D5601	8-719-988-61	DIODE 1SS355TE-17			
		< IC >			
IC5501	8-752-102-40	IC CXA3592R-T4			
IC5502	8-759-714-77	IC LZ9FF474			
IC5601	8-759-564-49	IC TC7W53FU (TE12R)			
IC5602	8-759-075-70	IC TA75S393F			
		< COIL >			
L5501	1-469-526-91	INDUCTOR	22uH		
L5503	1-412-949-21	INDUCTOR	6.8uH		
L5601	1-428-878-11	INDUCTOR	82uH		
L5602	1-412-056-11	INDUCTOR	4.7uH		
		< TRANSISTOR >			
Q5502	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q5503	8-729-054-48	TRANSISTOR	UP04601008S0		
Q5504	8-729-054-48	TRANSISTOR	UP04601008S0		
Q5505	6-550-242-01	TRANSISTOR	DTC114EMT2L		
Q5601	6-550-234-01	TRANSISTOR	UNR32A300LS0		
Q5602	6-550-083-01	TRANSISTOR	TPC6C01 (TE85R)		
		< RESISTOR >			
R5501	1-218-985-11	RES-CHIP	470K	5%	1/16W
R5503	1-208-933-11	METAL CHIP	82K	0.5%	1/16W
R5505	1-218-967-11	RES-CHIP	15K	5%	1/16W
R5506	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R5507	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5508	1-218-975-11	RES-CHIP	68K	5%	1/16W
R5509	1-218-969-11	RES-CHIP	22K	5%	1/16W
R5510	1-218-975-11	RES-CHIP	68K	5%	1/16W
R5511	1-218-989-11	RES-CHIP	1M	5%	1/16W
R5512	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5513	1-218-989-11	RES-CHIP	1M	5%	1/16W
R5515	1-218-990-11	SHORT CHIP	0		
R5516	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R5519	1-218-990-11	SHORT CHIP	0		
R5521	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5522	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5531	1-218-980-11	RES-CHIP	180K	5%	1/16W
R5532	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5533	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R5534	1-218-990-11	SHORT CHIP	0		
R5540	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5541	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5542	1-216-864-11	METAL CHIP	0	5%	1/10W
R5543	1-216-864-11	METAL CHIP	0	5%	1/10W
R5544	1-216-864-11	METAL CHIP	0	5%	1/10W
R5545	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5602	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5603	1-218-966-11	RES-CHIP	12K	5%	1/16W
R5606	1-218-969-11	RES-CHIP	22K	5%	1/16W
R5607	1-218-949-11	RES-CHIP	470	5%	1/16W
R5610	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
		< COMPOSITION CIRCUIT BLOCK >			
RB5501	1-234-372-21	RES, NETWORK 100 x4 (1005)			
RB5502	1-234-384-11	RES, NETWORK 1M x4 (1005)			
RB5503	1-234-378-21	RES, NETWORK 10K x4 (1005)			
RB5601	1-234-378-21	RES, NETWORK 10K x4 (1005)			
		< TRANSFORMER >			
⚠T5601	1-435-786-31	TRANSFORMER, INVERTER			

Ref. No.	Part No.	Description			
	A-7013-267-A	SI-035 BOARD, COMPLETE			
		************************			
		(D752, D753, IC751, SE751 and SE752 are not included in this complete board.)			
		< CAPACITOR >			
C751	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C752	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C755	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
		< CONNECTOR >			
CN751	1-816-232-11	PIN, CONNECTOR (PC BOARD) 4P			
CN753	1-779-335-21	CONNECTOR, FFC/FPC 22P			
CN754	1-779-327-11	CONNECTOR, FFC/FPC 6P			
		< DIODE >			
D752	8-719-060-65	DIODE DCC3810 (IR EMITTER)			
D753	8-719-060-65	DIODE DCC3810 (IR EMITTER)			
D754	8-719-064-07	DIODE SML-310LTT86 (TALLY)			
		< FERRITE BEAD >			
FB753	1-414-813-11	FERRITE	0uH		
		< IC >			
IC751	6-701-681-01	IC RPM7140-V4			
		< COIL >			
L751	1-419-353-21	INDUCTOR	10uH		
		< TRANSISTOR >			
Q751	6-550-091-01	TRANSISTOR	2SA2058 (TE85L)		
Q752	8-729-028-26	TRANSISTOR	2SK1829 (TE85L)		
Q753	8-729-023-22	TRANSISTOR	2SD2114K		
		< RESISTOR >			
R754	1-216-806-11	METAL CHIP	56	5%	1/10W
R755	1-216-806-11	METAL CHIP	56	5%	1/10W
R756	1-216-821-11	METAL CHIP	1K	5%	1/10W
R757	1-216-821-11	METAL CHIP	1K	5%	1/10W
R760	1-216-845-11	METAL CHIP	100K	5%	1/10W
R761	1-216-819-11	METAL CHIP	680	5%	1/10W

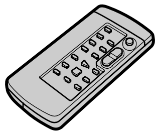
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SI-305

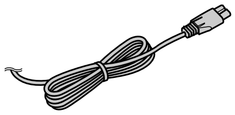
Ref. No.	Part No.	Description
		< SENSOR >
SE751	1-803-042-31	SENSOR, ANGULAR VELOCITY (PITCH)
SE752	1-803-042-41	SENSOR, ANGULAR VELOCITY (YAW)
		< VARISTOR >
VDR751	1-801-862-11	VARISTOR, CHIP (1608)

Electrical parts list of the VC-305 board are not shown.
Pages 5-18 to 5-25 are not shown.

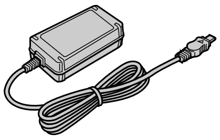
Checking supplied accessories.



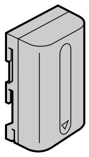
Wireless Remote Commander (1)
RMT-814
1-475-141-61
Battery case lid (for RMT-814)
3-742-854-01



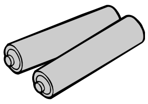
Power Cord (1)
⚠ 1-575-131-11 (E)
⚠ 1-790-107-22 (US, CND)
⚠ 1-790-732-11 (JE)



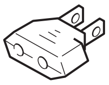
AC-L15A/L15B AC Adaptor (1)
⚠ 1-477-533-31



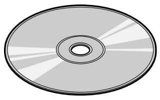
NP-FM30 battery pack (1)
⚠ A-7096-387-A (US, CND)
⚠ A-7096-388-B (EXCEPT US, CND)



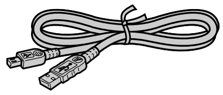
R6 (Size AA) battery
for Remote Commander (2)



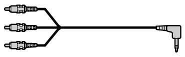
Adaptor, conversion 2P
⚠ 1-569-007-11 (JE)
⚠ 1-569-008-12 (E)



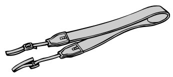
CD-ROM
(SPVD-010 USB Driver) (1)
3-078-942-01 (E, BR, JE)
3-078-943-01 (US, CND)



USB cable (1)
1-823-931-11



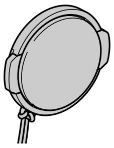
A/V connecting cable (STEREO) (1)
1-824-097-11



Shoulder strap (1)
3-987-015-01

Other accessories

3-079-467-13	OPERATING INSTRUCTIONS (ENGLISH) (EXCEPT BR)
3-079-467-23	OPERATING INSTRUCTIONS (FRENCH) (CND)
3-079-467-33	OPERATING INSTRUCTIONS (SPANISH, PORTUGUESE) (E, JE)
3-079-467-43	OPERATING INSTRUCTIONS (TRADITIONAL CHINESE) (E)
3-079-467-53	OPERATING INSTRUCTIONS (KOREAN) (JE)
3-079-467-63	OPERATING INSTRUCTIONS (ARABIC) (E)



Lens cap (1)
X-3952-971-1

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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Ver 1.2 2003. 03

Revision History

SECTION 6
ADJUSTMENTS

ADJ

Link

- **Before starting adjustments**
  - Adjusting items when replacing main parts and boards
- **CAMERA SECTION ADJUSTMENTS**
  - PREPARATIONS BEFORE ADJUSTMENTS
  - INITIALIZATION OF 8, A, B, C, D, E, F, 18, 1B, 1C, 1F PAGE DATA
  - CAMERA SYSTEM ADJUSTMENTS
  - ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS
  - LCD SYSTEM ADJUSTMENTS
- **MECHANISM SECTION ADJUSTMENTS**
  - ADJUSTMENT REMOTE COMMANDER
  - HOW TO ENTER RECORD MODE WITHOUT CASSETTE
  - HOW TO ENTER PLAYBACK MODE WITHOUT CASSETTE
  - TAPE PATH ADJUSTMENT
  - CHECKS AFTER ADJUSTMENTS
- **VIDEO SECTION ADJUSTMENTS**
  - PREPARATIONS BEFORE ADJUSTMENTS
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  - SERVO AND RF SYSTEM ADJUSTMENTS
  - VIDEO SYSTEM ADJUSTMENTS
  - AUDIO SYSTEM ADJUSTMENTS
- **SERVICE MODE**
  - ADJUSTMENT REMOTE COMMANDER
  - DATA PROCESS
  - SERVICE MODE

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2. DISASSEMBLY	○	×
3. BLOCK DIAGRAMS	OVERALL POWER	×
4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS	CD-418, PD-180, LB-083, SI-035, LS-057 BOARD FP-228, FP-299, FP-300, FP-301, FP-302, FP-569, FP-577 FLEXIBLE	VC-305 BOARD
5. REPAIR PARTS LIST	EXPLODED VIEWS	×
	ELECTRICAL PARTS	○ (VC-305 BOARD)

SONY®

9-876-241-51

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* The optical axis frame is shown on page 6-64
The color reproduction frame is shown on page 6-65

SECTION 6
ADJUSTMENTS

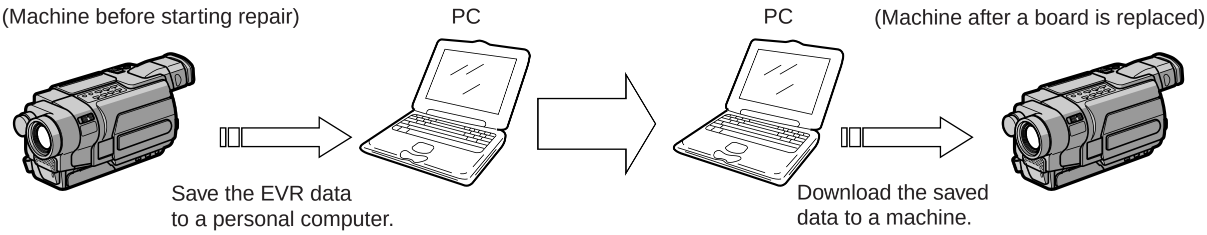
1. Before starting adjustments

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

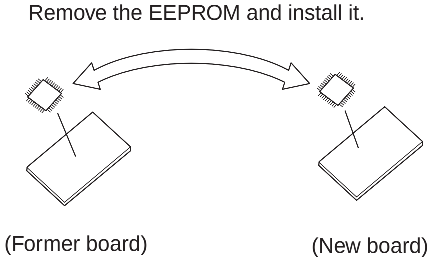
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.


(Machine before starting repair)
PC
PC
(Machine after a board is replaced)
Save the EVR data
to a personal computer.
Download the saved
data to a machine.

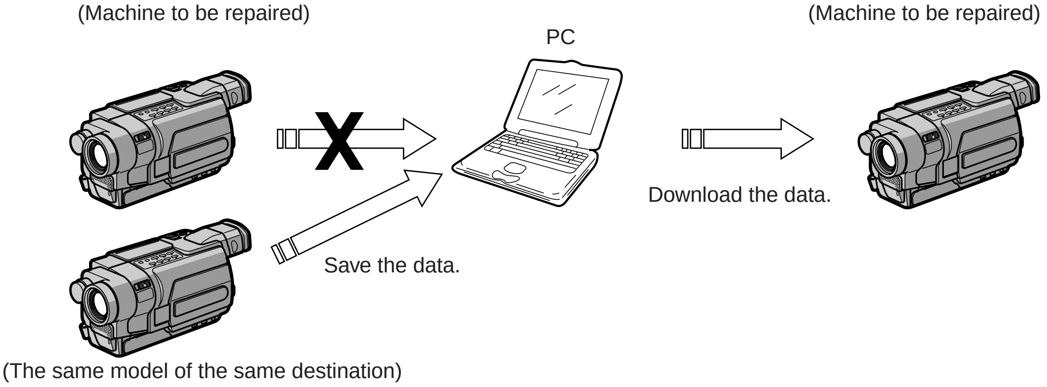
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.


Remove the EEPROM and install it.
(Former board)
(New board)

Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.


(Machine to be repaired)
(Machine to be repaired)
PC
X
Download the data.
Save the data.
(The same model of the same destination)

After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-3 for the items to be checked)

1-1. Adjusting items when replacing main parts and boards

• Adjusting items when replacing main parts

When replacing main parts, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced part																		
		Block replacement							Mounted part replacement											
		Lens device	Video light (Note 2)	LCD block LCD901 (LCD panel)	LCD block ND901 (Fluorescent tube)	Mechanism deck (Note 1)	Mechanism deck M901 (Drum assembly) (Note 1)	Mechanism deck M902 (Capstan motor)	CD-418 board IC951 (CCD imager)	SI-035 board SE751/752 (YAW, PITCH sensor)	VC-305 board IC1501, X1501 (Timing generator)	VC-305 board IC1502 (S/H, AGC, A/D CONV.)	VC-305 board IC8001 (Video/Audio DSP)	VC-305 board IC6001 (DV signal process)	VC-305 board IC3701 (Video out)	VC-305 board IC1601 (EVR)	VC-305 board IC7001 (LCD drive)	VC-305 board IC7002 (Timing generator)	PD-180 board IC5501 (LCD drive)	PD-180 board IC5502 (Timing generator)
Initialization of 8, A, B, C, D, E, F, 18, 1B, 1C, 1F page data	Initializing of A, D page data																			
	Initializing of B, 1B page data																			
	Initializing of 8, C, 18, 1C page data																			
	Initializing of E, F, 1F page data																			
Camera	HALL adj.	●																		
	Flange back adj.	●							●											
	Optical axis adj.	●							●											
	Color reproduction adj.								●			●								
	LV standard data input								●			●								
	AWB standard data input								●			●								
	Auto white balance adj.								●			●								
	Angular velocity sensor output check and steadyshot check									●										
EVF	VCO adj.																●	●		
	RGB AMP adj.																●			
	Contrast adj.																●			
LCD	VCO adj.																		●	●
	RGB AMP adj.																		●	
	Contrast adj.																		●	
	COM AMP adj.																		●	
	V-COM adj.			●															●	
	White balance adj.			●	●														●	
System control	Node uniqe ID No. input																			
Servo, RF	REEL FG adj.					●														
	CAP FG duty adj.					●		●												
	Switching position adj.					●	●													
	SD error rate check (LP)					●	●							●						
Video	27 MHz origin osillation adj.										●					●				
	S VIDEO OUT Y level adj.												●		●					
	S VIDEO OUT C level adj.												●		●					
Mechanism	Tape path adj.					●	●	●												

Table 6-1-1 (1)

Note 1: When replacing the drum assy or mechanism deck, reset the data of page: 7, address: A7 to A9.
(Refer to “Record of Use Check” of “6-4. SERVICE MODE”)

Note 2: When replacing the video light, reset the data of page: 7, address: CE to CF.
(Refer to “Record of Use Check” of “6-4. SERVICE MODE”)

• Adjusting items when replacing a board or EEPROM

When replacing a board or EEPROM, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced part				
		PD-180 board (COMPLETE)	VC-305 board (COMPLETE)	VC-305 board IC4405 (EEP ROM)	VC-305 board IC4502 (EEP ROM)	Supporting RadarW
Initialization of 8, A, B, C, D, E, F, 18, 1B, 1C, 1F page data	Initializing of A, D page data		●	●		
	Initializing of B, 1B page data		●	●		
	Initializing of 8, C, 18, 1C page data		●		●	
	Initializing of E, F, 1F page data		●		●	
Camera	HALL adj.		●		●	●
	Flange back adj.		●		●	●
	Optical axis adj.		●		●	
	Color reproduction adj.		●		●	
	LV standard data input		●		●	●
	AWB standard data input		●		●	●
	Auto white balance adj.		●		●	●
	Angular velocity sensor output check and steadyshot check		●		●	●
EVF	VCO adj.		●		●	
	RGB AMP adj.		●		●	●
	Contrast adj.		●		●	●
LCD	VCO adj.	●	●		●	
	RGB AMP adj.	●	●		●	
	Contrast adj.	●	●		●	
	COM AMP adj.	●	●		●	
	V-COM adj.	●	●		●	
	White balance adj.	●	●		●	
System control	Node uniqe ID No. input		●		●	
Servo, RF	REEL FG adj.		●		●	●
	CAP FG duty adj.		●		●	●
	Switching position adj.		●		●	●
	SD error rate check (LP)		●		●	●
Video	27 MHz origin osillation adj.		●		●	
	S VIDEO OUT Y level adj.		●		●	
	S VIDEO OUT C level adj.		●		●	
Mechanism	Tape path adj.					

Table 6-1-1 (2)

6-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENTS (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Regulated power supply
- Color monitor
- Digital voltmeter
- Vectorscope
- Frequency counter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.4	J-6080-806-A	White balance check
	ND filter 0.1	J-6080-807-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjustment remote commander (RM-95 upgraded). (Note 1)	J-6082-053-B	
J-6	Siemens star chart	J-6080-875-A	For checking the flange back
J-7	Clear chart for pattern box	J-6080-621-A	
J-8	CPC jig connector (Note 2)	J-6082-539-A	For connecting the adjustment remote commander
J-9	I/F unit for LANC control (Note 2)	J-6082-521-A	For connecting the adjustment remote commander
J-10	Mini pattern box	J-6082-353-B	For adjusting the flange back
J-11	Camera table	J-6082-384-A	For adjusting the flange back
J-12	Multi CPC jig	J-6082-311-A	For adjusting the LCD system

Note 1: If the micro processor IC in the adjustment remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The “Jig Modification” is necessary for connecting the adjustment remote commander to this set.
Modify the jig by referring to page 6-5.

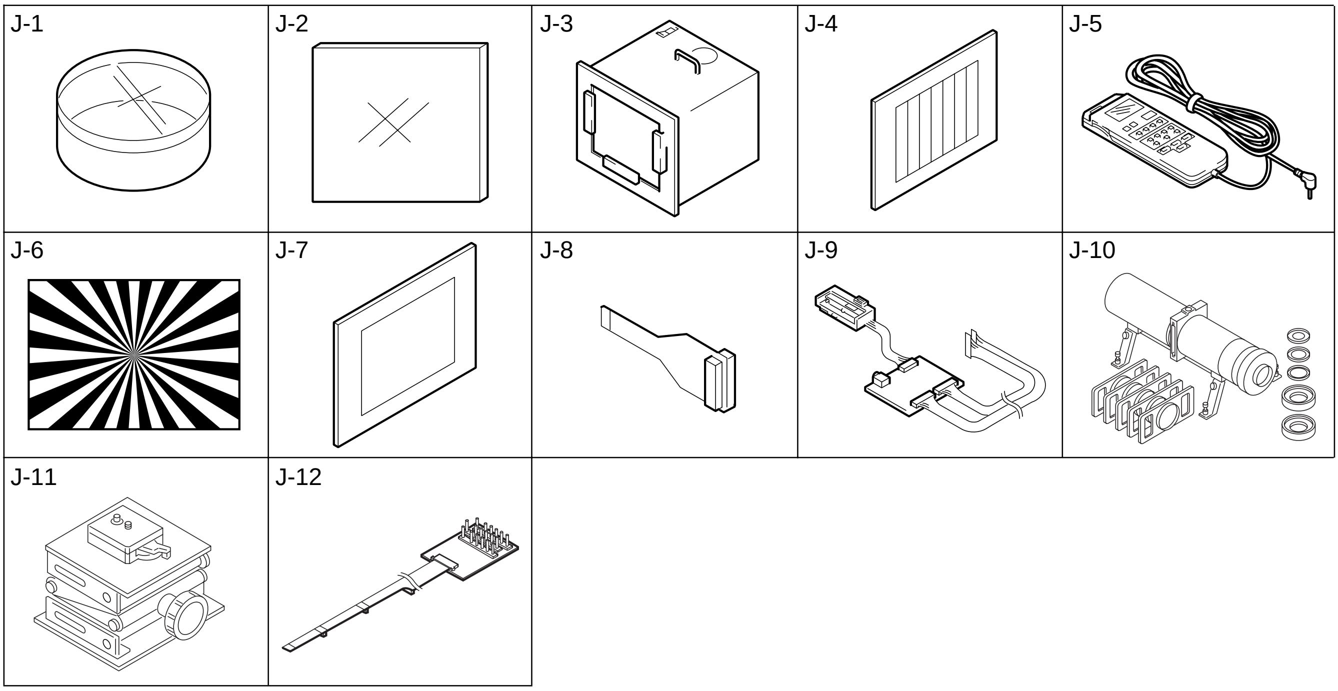


Fig. 6-1-1

[Jig Modification]

Connect the LANC SIG pin of the I/F unit for LANC control to the land of pin 1 of the CPC jig connector with a jumper wire.
This modification is required in the DCR-TRV250 only. Be sure to disconnect the jumper wire when using the I/F unit for LANC control or CPC jig connector on other models.

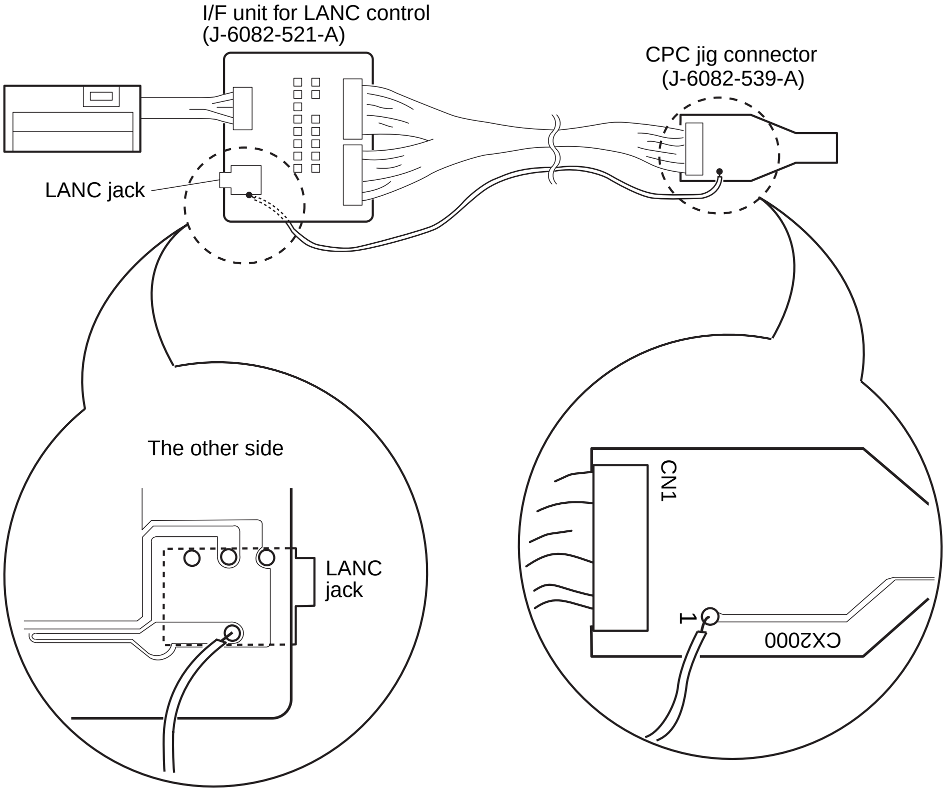

I/F unit for LANC control
(J-6082-521-A)
CPC jig connector
(J-6082-539-A)
LANC jack
The other side
LANC
jack
CN1
1
CX2000

Fig. 6-1-2

1-1-2. Preparations

Note 1: For details of how remove the cabinet and boards, refer to “2. DISASSEMBLY”.

Note 2: When performing only the adjustments, the lens block and boards need not be disassembled.

1) Connect the equipment for adjustments according to Fig. 6-1-5.
2) Connect the adjustment remote commander to VC-305 board CN1011 via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A). (Fig. 6-1-4)
   The “Jig Modification” is necessary for connecting the adjustment remote commander to this set.
   Modify the jig by referring to page 6-5.
   To operate the adjustment remote commander, connect the AC power adaptor to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.
3) The front panel block (SI-035 board, video light, microphone unit) need not be assembled except during the steadyshot operation check.

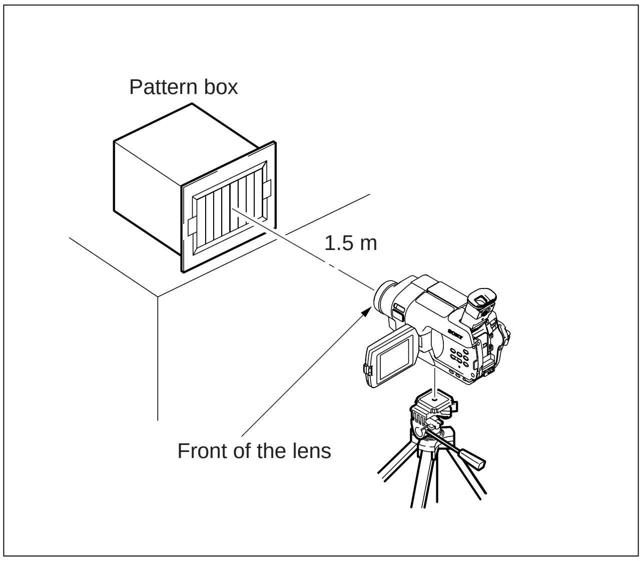


Fig. 6-1-3

Note 3: As removing the cabinet (R) (removing the VC-305 board CN1007) means removing the lithium 3V power supply (CF-3000 block BT001), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time, etc.) will be lost. Before removing, note down the self-diagnosis data (data of page: 7, address: B0 to C6) and data on history use (data of page: 7, address: A7 to A9 and C8 to CF). (Refer to “SELF-DIAGNOSIS FUNCTION” for the self-diagnosis data, and to “6-4. Service Mode” for the data on the history use)

Note 4: Setting the “Forced Camera Power ON” Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.
   The above procedure will enable the camera power to be turned on with the power switch (SS-3000 block) removed. After completing adjustments, be sure to exit the “Forced Camera Power ON Mode”.

Note 5: Exiting the “Forced Camera Power ON” Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

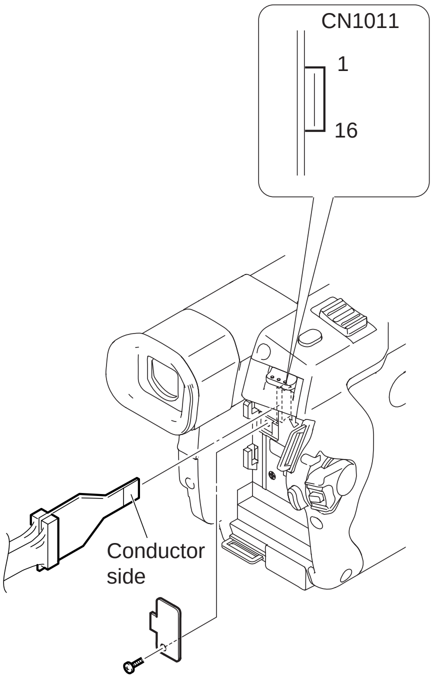


Fig. 6-1-4

Note 1: The “Jig Modification” is necessary for connecting the adjustment remote commander to this set.
Modify the jig by referring to page 6-5.

Note 2: Use either the AC power adaptor or the InfoLITHIUM battery as the power supply of I/F unit for LANC control.

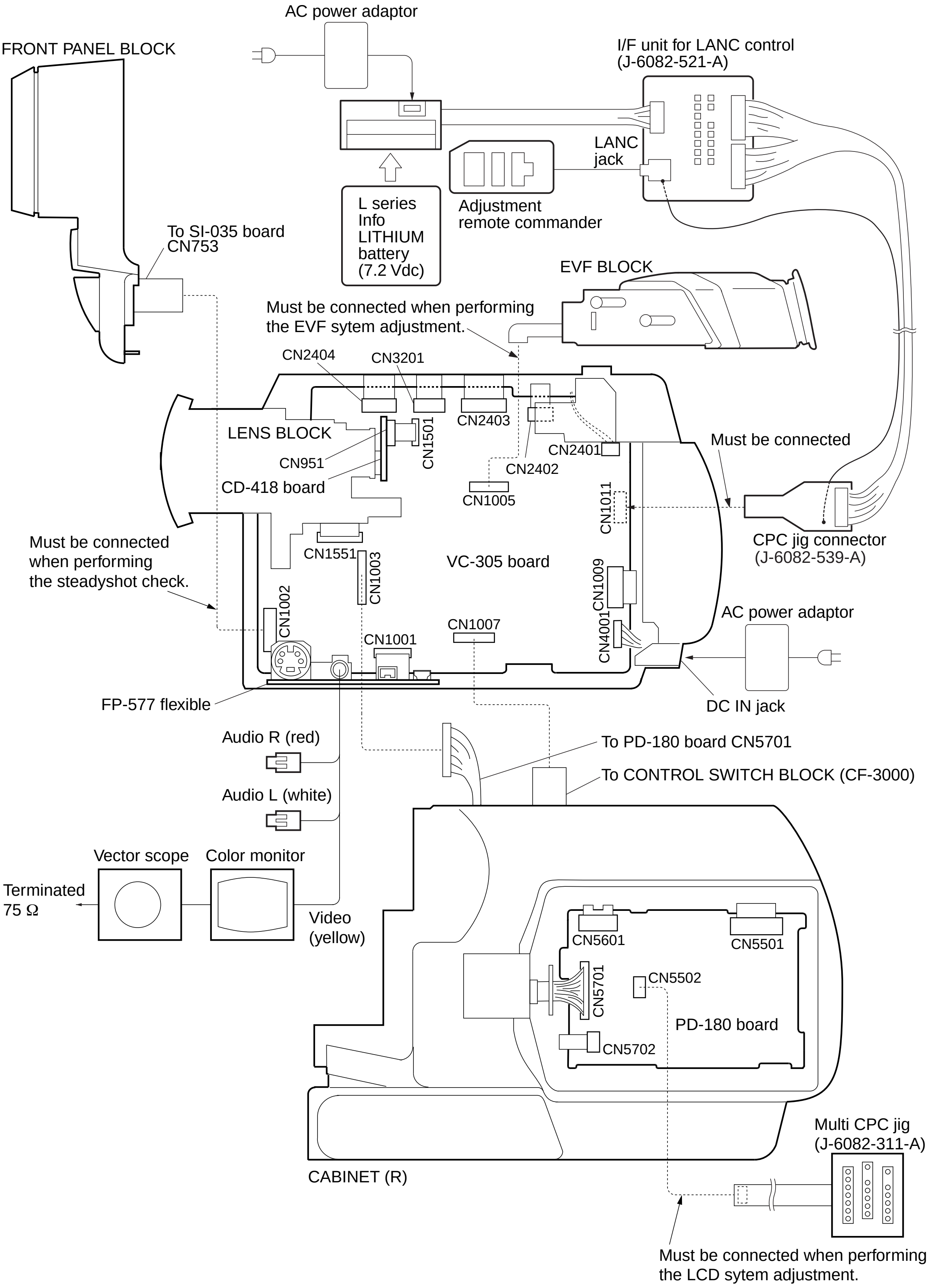

AC power adaptor
FRONT PANEL BLOCK
I/F unit for LANC control
(J-6082-521-A)
LANC
jack
L series
Info
LITHIUM
battery
(7.2 Vdc)
Adjustment
remote commander
To SI-035 board
CN753
EVF BLOCK
Must be connected when performing
the EVF sytem adjustment.
CN2404
CN3201
CN2403
LENS BLOCK
CN1501
CN2401
Must be connected
CN951
CN2402
CD-418 board
CN1005
CN1011
CPC jig connector
(J-6082-539-A)
Must be connected
when performing
the steadyshot check.
CN1551
CN1003
VC-305 board
CN1009
AC power adaptor
CN1002
CN1007
CN4001
CN1001
FP-577 flexible
DC IN jack
Audio R (red)
To PD-180 board CN5701
To CONTROL SWITCH BLOCK (CF-3000)
Audio L (white)
Vector scope
Color monitor
Terminated
75 Ω
Video
(yellow)
CN5601
CN5501
CN5701
CN5502
PD-180 board
CN5702
Multi CPC jig
(J-6082-311-A)
CABINET (R)
Must be connected when performing
the LCD sytem adjustment.

Fig. 6-1-5

1-1-3. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (SS-3000 block) .... CAMERA
2. FOCUS (CF-3000 block) .... MANUAL
3. BACK LIGHT (CF-3000 block) .... OFF
4. PROGRAM AE (MENU setting) .... OFF
5. NIGHT SHOT switch (Lens block) .... OFF
6. EXPOSURE (CF-3000 block) .... AUTO
7. P EFFECT (MENU setting) .... OFF
8. D ZOOM (MENU setting) .... OFF
9. DEMO MODE (MENU setting) .... OFF
10. 16 : 9 WIDE (MENU setting) .... OFF

2. Order of Adjustments

Basically carry out adjustments in the order given.

Color bar chart (Color reproduction adjustment frame)

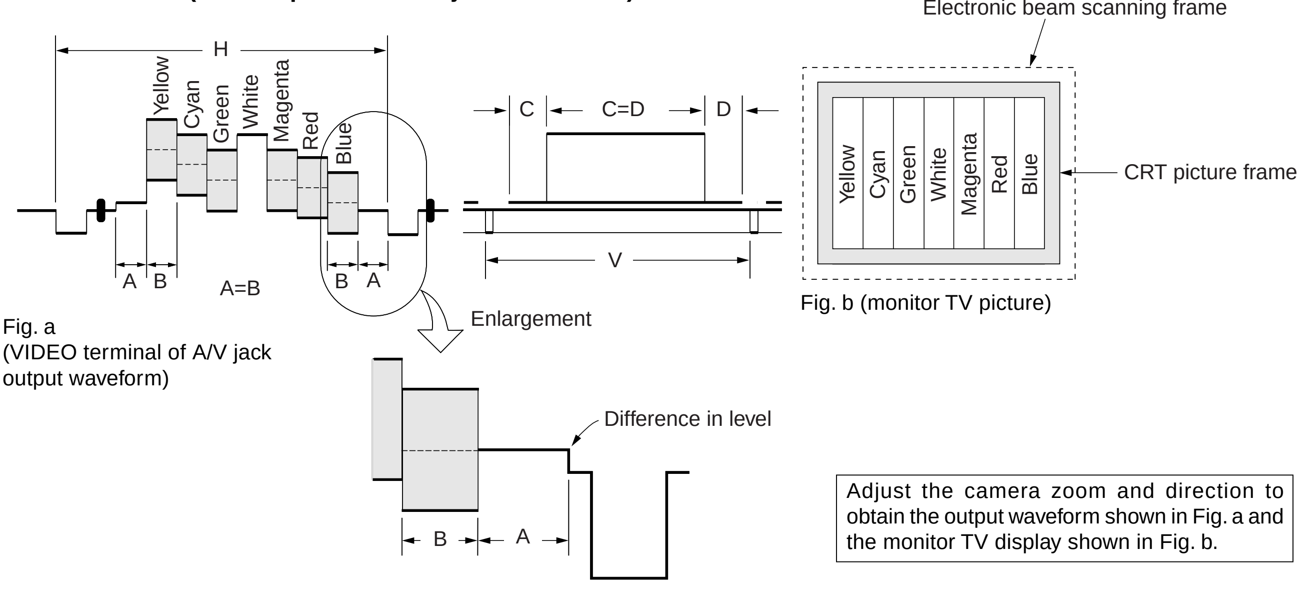

Electronic beam scanning frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
C
C=D
D
CRT picture frame
V
A
B
A=B
B
A
Enlargement
Difference in level
B
A

Fig. a
(VIDEO terminal of A/V jack
output waveform)

Fig. b (monitor TV picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the monitor TV display shown in Fig. b.

Fig. 6-1-6

3. Subjects

1) Color bar chart (Color reproduction adjustment frame)
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-6. (Color reproduction adjustment frame)
2) Clear chart (Color reproduction adjustment frame)
   Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time)
3) Chart for flange back adjustment
   Join together a piece of white A0 size paper (1189mm × 841 mm) and a piece of black paper to make the chart shown in Fig. 6-1-7.

Note: Use a non-reflecting and non-glazing vellum paper. The size must be A0 or larger and the joint between the white and black paper must not have any undulations.

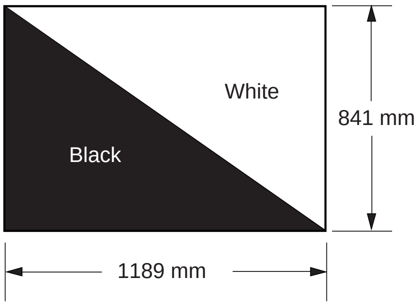

White
Black
841 mm
1189 mm

Fig. 6-1-7

1-2. INITIALIZATION OF 8, A, B, C, D, E, F, 18, 1B, 1C, 1F PAGE DATA

Note: If reading/writing data on pages 18, 1B, 1C, 1F, set data: 01 to page: 0, address: 10, and then select pages 8, B, C, F. By this data setting, the pages 18, 1B, 1C, 1F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

1-2-1. Initialization of A, D Page Data

Note: Check that the data of page: 0, address: 10 is “00”.

1. Initializing the A, D Page Data

Note 1: If “Initialization of Pages A, D” is executed, all data on pages A, D are initialized. (Only an individual page cannot be initialized)

Note 2: If the A, D page data has been initialized, the following adjustments need to be performed again.
1) Modification of A, D page data

Adjustment Page	A
Adjustment Address	10 to FF
Adjustment Page	D
Adjustment Address	10 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	7	03	01	
4	7	00	28	
5	7	01	28	Press PAUSE button.
6	7	02		Check the data changes to “01”.
7				Perform “Modification of A, D Page Data”

2. Modification of A, D Page Data

If the A, D page data has been initialized, change the data of the“Fixed data-2” address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note 1: If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification A, D page data:

Order	Page	Address	Data	Procedure
1	2	00	29	
2	2	01	29	Press PAUSE button.

Note 2: If the following symptoms occur after completing of the“Modification A, D page data”, check that the data of the “Fixed data-2” addresses of A, D page are same as those of the same model of the same destination.
1) The power is shut off so that unit cannot operate.

3. A Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, D Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, D Page Data”)

Address	Initial value	Remark
10 to 1A		Fixed data-1 (Initialized data)
1B		Fixed data-2
1C		
1D to 25		Fixed data-1 (Initialized data)
26		Fixed data-2
27 to 2C		Fixed data-1 (Initialized data)
2D		Fixed data-2
2E, 2F		Fixed data-1 (Initialized data)
30		Fixed data-2
31		Fixed data-1 (Initialized data)
32		Fixed data-2
33 to 35		Fixed data-1 (Initialized data)
36		Fixed data-2
37 to 39		Fixed data-1 (Initialized data)
3A		Fixed data-2
3B		Fixed data-1 (Initialized data)
3C		Fixed data-2
3D		
3E		
3F to 4F		Fixed data-1 (Initialized data)
50		Fixed data-2
51		
52		
53, 54		Fixed data-1 (Initialized data)
55		Fixed data-2
56		
57		Fixed data-1 (Initialized data)
58		Fixed data-2
59		
5A		
5B		
5C		
5D, 5E		Fixed data-1 (Initialized data)
5F		Fixed data-2
60 to 62		Fixed data-1 (Initialized data)
63		Fixed data-2
64 to 66		Fixed data-1 (Initialized data)
67		Fixed data-2
68 to 6C		Fixed data-1 (Initialized data)
6D		Fixed data-2
6E to A3		Fixed data-1 (Initialized data)
A4		Fixed data-2
A5		
A6 to A9		Fixed data-1 (Initialized data)

A Page table

Address	Initial value	Remark
AA		Fixed data-2
AB		
AC to B3		Fixed data-1 (Initialized data)
B4		Fixed data-2
B5 to CF		Fixed data-1 (Initialized data)
D0		Fixed data-2
D1		
D2, D3		Fixed data-1 (Initialized data)
D4		Fixed data-2
D5 to FF		Fixed data-1 (Initialized data)

4. D Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, D Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, D Page Data”)

Address	Initial value	Remark
10	00	Test mode
11	Fixed data-1 (Initialized data)	
12	Fixed data-2	
13		
14, 15	Fixed data-1 (Initialized data)	
16	Fixed data-2	
17 to 19	Fixed data-1 (Initialized data)	
1A	Fixed data-2	
1B		
1C to 22	Fixed data-1 (Initialized data)	
23	Fixed data-2	
24		
25		
26		
27 to 29	Fixed data-1 (Initialized data)	
2A	Fixed data-2	
2B		
2C to 35	Fixed data-1 (Initialized data)	
36	Fixed data-2	
37		
38		
39	Fixed data-1 (Initialized data)	
3A	Fixed data-2	
3B to 58	Fixed data-1 (Initialized data)	
59	Fixed data-2	
5A to FF	Fixed data-1 (Initialized data)	

1-2-2. Initialization of B, 1B Page Data

Note: If reading/writing data on pages 1B, set data: 01 to page: 0, address: 10, and then select pages B. By this data setting, the pages 1B can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

1. Initializing the B, 1B Page Data

Note 1: If “Initialization of Pages B, 1B” is executed, all data on pages B, 1B are initialized. (Only an individual page cannot be initialized)

Note 2: If the B, 1B page data has been initialized, the following adjustments need to be performed again.
1) Modification of B, 1B page data

Adjustment Page	B
Adjustment Address	00 to FF
Adjustment Page	1B
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	5	02	FF	
4	5	01	F3	Press PAUSE button.
5	5	00	01	Press PAUSE button.
6	5	02		Check the data changes to “00”.
7	5	0E	00	Press PAUSE button.
8	5	03	20	Press PAUSE button.
9	5	01	FA	Press PAUSE button.
10	5	00	01	Press PAUSE button.
11	5	0E		Check the data changes to “01”.
12				Turn off the power supply, then turn on them again.
13				Perform “Modification of B Page Data”

2. Modification of B, 1B Page Data

If the B, 1B page data has been initialized, change the data of the “Fixed data-2” address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages B, set data: 00 to page: 0, address: 10, and then select pages B.
3) If modification of data on pages 1B, set data: 01 to page: 0, address: 10, and then select pages B. After the modification of data finished, return the data on page: 0, address: 10 to “00”.
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification B, 1B page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE button.

3. B Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the B, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of B, 1B Page Data”)

Address	Initial value	Remark
00 toFF	Fixed data-1 (Initialized data)	

4. 1B Page table

Note 1: If reading/writing data on pages 1B, set data: 01 to page: 0, address: 10, and then select pages B. By this data setting, the pages 1B can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the B, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of B, 1B Page Data”)

Address	Initial value	Remark
00 to FF	Fixed data-1 (Initialized data)	

1-2-3. Initialization of 8, C, 18, 1C Page Data

Note: If reading/writing data on pages 18, 1C, set data: 01 to page: 0, address: 10, and then select pages 8, C. By this data setting, the pages 18, 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

1. Initializing the 8, C, 18, 1C Page Data

Note 1: If “Initialization of Pages 8, C, 18, 1C” is executed, all data on pages 8, C, 18, 1C are initialized. (Only an individual page cannot be initialized)

Note 2: If the 8, C, 18, 1C page data has been initialized, the following adjustments need to be performed again.

1) Modification of 8, C, 18, 1C page data
2) Electronic viewfinder system adjustments
3) LCD system adjustments
4) Node unique ID No. input
5) Servo, RF system adjustments
6) “S VIDEO OUT Y level adjustment” and “S VIDEO OUT C level adjustment” of the video system adjustments
7) Audio system adjustments

Adjustment Page	8
Adjustment Address	00 to FF
Adjustment Page	C
Adjustment Address	10 to FF
Adjustment Page	18
Adjustment Address	00 to FF
Adjustment Page	1C
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	81	10	
4	3	80	0C	Press PAUSE button.
5	3	80		Check the data changes to “1C”.
6				Perform “Modification of 8, C, 18, 1C Page Data”

2. Modification of 8, C, 18, 1C Page Data

If the 8, C, 18, 1C page data has been initialized, change the data of the “Fixed data-2” address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages 8, C, set data: 00 to page: 0, address: 10, and then select pages 8, C.
3) If modification of data on pages 18, 1C, set data: 01 to page: 0, address: 10, and then select pages 8, C. After the modification of data finished, return the data on page: 0, address: 10 to “00”.
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification 8, C, 18, 1C page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE button.

3. 8 Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, C, 18, 1C Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, C, 18, 1C Page Data”)

Address	Initial value	Remark
00 to 42	Fixed data-1 (Initialized data)	
43	Fixed data-2	
44 to FF	Fixed data-1 (Initialized data)	

4. C Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, C, 18, 1C Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, C, 18, 1C Page Data”)

Address	Initial value	Remark
10	EE	Switching position adj.
11	00	
12	00	
13	00	
14, 15	Fixed data-1 (Initialized data)	
16	E0	CAP FG duty adj.
17	E0	REEL FG adj.
18 to 24	Fixed data-1 (Initialized data)	
25	80	S VIDEO OUT Y level adj.
26	70	S VIDEO OUT C level adj.
27	50	
28 to 2E	Fixed data-1 (Initialized data)	
2F	0E	REEL FG adj.
30 to 33	Fixed data-1 (Initialized data)	
34	Fixed data-2	
35		
36	6F	VCO adj. (EVF)
37	5C	
38	Fixed data-1 (Initialized data)	
39	B3	RGB AMP adj. (EVF)
3A to 3D	Fixed data-1 (Initialized data)	
3E	31	Contrast adj. (EVF)
3F	Fixed data-1 (Initialized data)	
40	Fixed data-2	
41 to 44	Fixed data-1 (Initialized data)	
45	Fixed data-2	
46		
47	67	VCO adj. (LCD)
48	79	
49	91	V-COM adj. (LCD)
4A	27	RGB AMP adj. (LCD)
4B	Fixed data-2	
4C	A6	COM AMP adj. (LCD)
4D	87	White balance adj. (LCD)
4E	68	
4F	4C	Contrast adj. (LCD)
50	Fixed data-2	
51 to 53	Fixed data-1 (Initialized data)	
54	Fixed data-2	
55 to 60	Fixed data-1 (Initialized data)	
61	Fixed data-2	
62		
63 to 9B	Fixed data-1 (Initialized data)	
9C	Fixed data-2	

C Page table

Address	Initial value	Remark
9D to D2	Fixed data-1 (Initialized data)	
D3	Fixed data-2	
D4		
D5		
D6		
D7 to DE	Fixed data-1 (Initialized data)	
DF	Fixed data-2	
E0	08	Node unique ID No. input
E1	00	
E2	46	
E3	01	
E4	02	
E5	00	
E6	00	
E7	00	
E8 to F3	Fixed data-1 (Initialized data)	
F4	00	Emergency memory
F5	00	
F6	00	
F7	00	
F8	00	
F9	00	
FA	00	
FB	00	
FC	00	
FD	00	
FE	00	
FF	00	

5. 18 Page table

Note 1: If reading/writing data on page 18, set data: 01 to page: 0, address: 10, and then select page 8. By this data setting, the page 18 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, C, 18, 1C Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, C, 18, 1C Page Data”)

Address	Initial value	Remark
00 to FF	Fixed data-1 (Initialized data)	

6. 1C Page table

Note 1: If reading/writing data on page 1C, set data: 01 to page: 0, address: 10, and then select page C. By this data setting, the page 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, C, 18, 1C Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, C, 18, 1C Page Data”)

Address	Initial value	Remark
00 to 10	Fixed data-1 (Initialized data)	
11	Fixed data-2	
12 to B2	Fixed data-1 (Initialized data)	
B3	00	SD error rate check (LP)
B4	00	
B5	00	
B6	00	
B7	00	
B8	80	
B9	00	
BA	00	
BB	00	
BC	00	
BD	00	
BE	00	
BF	00	
C0	00	
C1	00	
C2	00	
C3	80	
C4	00	
C5	00	
C6	00	
C7	00	
C8	00	
C9 to FF	Fixed data-1 (Initialized data)	

1-2-4. Initialization of E, F, 1F Page Data

Note: If reading/writing data on page 1F, set data: 01 to page: 0, address: 10, and then select page F. By this data setting, the page 1F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

1. Initializing the E, F, 1F Page Data

Note 1: If “Initialization of Pages E, F, 1F” is executed, all data on pages E, F, 1F are initialized. (Only an individual page cannot be initialized)

Note 2: If the E, F, 1F page data has been initialized, the following adjustments need to be performed again.

1) Modification of E, F, 1F page data
2) “27 MHz origin oscillation adjustment” of the video system adjustment.
3) Camera system adjustments

Adjustment Page	E
Adjustment Address	00 to FF
Adjustment Page	F
Adjustment Address	10 to FF
Adjustment Page	1F
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	6	01	2D	Press PAUSE button.
4	6	03	01	Press PAUSE button.
5	6	02		Check the data changes to “01”.
6				Perform “Modification of E, F, 1F Page Data”

2. Modification of E, F, 1F Page Data

If the E, F, 1F page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages E, F, set data: 00 to page: 0, address: 10, and then select pages E, F.
3) If modification of data on page 1F, set data: 01 to page: 0, address: 10, and then select page F. After the modification of data finished, return the data on page: 0, address: 10 to "00".
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification E, F, 1F page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE button.

3. E Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the E, F, 1F Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of E, F, 1F Page Data")

Address	Initial value	Remark
00 to 05	Fixed data-1 (Initialized data)	
06	Fixed data-2	
07 to 10	Fixed data-1 (Initialized data)	
11	Fixed data-2	
12, 13	Fixed data-1 (Initialized data)	
14	Fixed data-2	
15		
16		
17		
18		
19, 1A	Fixed data-1 (Initialized data)	
1B	Fixed data-2	
1C to 1E	Fixed data-1 (Initialized data)	
1F	Fixed data-2	
20, 21	Fixed data-1 (Initialized data)	
22	Fixed data-2	
23 to 31	Fixed data-1 (Initialized data)	
32	Fixed data-2	
33		
34 to 67	Fixed data-1 (Initialized data)	
68	Fixed data-2	
69 to 7B	Fixed data-1 (Initialized data)	
7C	Fixed data-2	
7D		
7E to 92	Fixed data-1 (Initialized data)	
93	Fixed data-2	
94 to AD	Fixed data-1 (Initialized data)	
AE	Fixed data-2	
AF to FF	Fixed data-1 (Initialized data)	

4. F Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the E, F,1F Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of E, F, 1F Page Data”)

Address	Initial value	Remark
10	80	27 MHz origin oscillation adj.
11		Fixed data-1 (Initialized data)
12		Fixed data-2
13	81	HALL adj.
14	5D	
15	88	
16		Fixed data-1 (Initialized data)
17		Fixed data-2
18	80	LV standard data input
19	7A	
1A	1B	Auto white balance standard data input
1B	00	
1C	07	
1D	00	
1E	0E	Auto white balance adj.
1F	00	
20	0D	
21	00	
22		Fixed data-1 (Initialized data)
23	22	Color reproduction adj.
24		Fixed data-1 (Initialized data)
25	27	Color reproduction adj.
26 to 29		Fixed data-1 (Initialized data)
2A	00	Color reproduction adj.
2B	F1	
2C, 2D		Fixed data-1 (Initialized data)
2E	2C	Auto white balance adj.
2F	B0	
30	5F	
31	A0	
32	28	Flange back adj.
33	EC	
34	35	
35	8F	
36	13	
37	B8	
38	00	
39	00	
3A	00	
3B	00	
3C	2B	
3D	19	
3E	00	
3F	32	
40	04	
41	00	Flange back adj.
42	00	
43		Fixed data-1 (Initialized data)
44		Fixed data-2
45		
46	FF	Optical axis adj.
47 to 4B		Fixed data-1 (Initialized data)
4C	19	HALL adj.
4D to 84		Fixed data-1 (Initialized data)
85		Fixed data-2
86 to 8B		Fixed data-1 (Initialized data)
8C		Fixed data-2
8D		
8E		
8F to 92		Fixed data-1 (Initialized data)
93		Fixed data-2
94		
95		
96		Fixed data-1 (Initialized data)
97		Fixed data-2
98		
99 to 9C		Fixed data-1 (Initialized data)
9D		Fixed data-2
9E		
9F		
A0		
A1		Fixed data-1 (Initialized data)
A2		Fixed data-2
A3		Fixed data-1 (Initialized data)
A4		Fixed data-2
A5 to BD		Fixed data-1 (Initialized data)
BE		Fixed data-2
BF		
C0 to C5		Fixed data-1 (Initialized data)
C6		Fixed data-2
C7		
C8		Fixed data-1 (Initialized data)
C9		Fixed data-2
CA		
CB		
CC		
CD to E3		Fixed data-1 (Initialized data)
E4		Fixed data-2
E5		
E6		Fixed data-1 (Initialized data)
E7		Fixed data-2
E8 to EC		Fixed data-1 (Initialized data)
ED		Fixed data-2
EE to FF		Fixed data-1 (Initialized data)

5. 1F Page table

Note 1: If reading/writing data on pages 1F, set data: 01 to page: 0, address: 10, and then select pages F. By this data setting, the pages 1F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the E, F, 1F Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of E, F, 1F Page Data")

Address	Initial value	Remark
00 to 07		Fixed data-1 (Initialized data)
08		Fixed data-2
09 to 65		Fixed data-1 (Initialized data)
66		Fixed data-2
67 to 6B		Fixed data-1 (Initialized data)
6C		Fixed data-2
6D		
6E		Fixed data-1 (Initialized data)
6F		Fixed data-2
70		
71		
72 to 76		Fixed data-1 (Initialized data)
77		Fixed data-2
78		
79		
7A to 7F		Fixed data-1 (Initialized data)
80		Fixed data-2
81, 82		Fixed data-1 (Initialized data)
83		Fixed data-2
84 to 87		Fixed data-1 (Initialized data)
88		Fixed data-2
89		
8A to 8C		Fixed data-1 (Initialized data)
8D		Fixed data-2
8E to 97		Fixed data-1 (Initialized data)
98		Fixed data-2
99		
9A		
9B		
9C		
9D		
9E		
9F		
A0		
A1		
A2		
A3 to C7		Fixed data-1 (Initialized data)
C8		Fixed data-2
C9 to D9		Fixed data-1 (Initialized data)
DA		Fixed data-2
DB		
DC		Fixed data-2
DD		
DE		
DF		
E0		
E1		Fixed data-1 (Initialized data)
E2		Fixed data-2
E3 to FF		Fixed data-1 (Initialized data)

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of “27 MHz Origin Oscillation Adjustment”, “S VIDEO OUT Y level Adjustment” and “S VIDEO OUT C level Adjustment” of “VIDEO SYSTEM ADJUSTMENT” are satisfied.
Check that the data of page: 0, address: 10, is “00”.
If not, select page: 0, address: 10, and set data “00”

1. HALL Adjustment RadarW

For detecting the position of lens iris, adjust the hall AMP gain and offset.

Mode	CAMERA
Subject	Not required
Measurement Point	Displayed data of page: 1 (Note 3)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	13 to 15, 4C
Specified value	84 to 88 during IRIS OPEN 15 to 19 during IRIS CLOSE

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Check that the data of page: 6, address: 02 is “00”.
If not, turn the power of unit OFF/ON.

Note 3: The right two digits of the page: 1 displayed data of the adjusting remote commander.

1:00:XX
Displayed data

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	94	86	
3	6	95	17	
4	6	01	6D	Press PAUSE button. (Note 4)
5	6	02		Check the data changes to “01”.
6	6	01	00	Press PAUSE button.

Note 4: The adjustment data will be automatically input to page: F, address: 13 to 15 and 4C.

Checking method:

Order	Page	Address	Data	Procedure
1	0	03	03	
2	6	01	01	Press PAUSE button.
3	1			Check that the displayed data (Note 3) during IRIS OPEN satisfied the specified value.
4	6	01	03	Press PAUSE button.
5	1			Check that the displayed data (Note 3) during IRIS CLOSE satisfied the specified value.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	94	00	
3	6	95	00	
4	0	03	00	
5	0	01	00	

2. Flange Back Adjustment RadarW
(Using the minipattern box)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Mode	CAMERA
Subject	Siemens star chart with ND filter for minipattern box (Note 1)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	32 to 42

Note 1: Dark Siemens star chart.
Note 2: Check that the data of page: 0, address: 10 is “00”.
Note 3: Check that the data of page: 6, address: 02 is “00”. If not, turn the power of unit OFF/ON.
Note 4: Perform the adjustment with the camcorder in horizontal state.
Note 5: Perform “HALL Adjustment” before this adjustment.

Switch setting:
1) NIGHT SHOT .... OFF

Preparations before adjustments:
1) The minipattern box is installed as shown in the following figure.
   Note 6: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of lens of camcorder is less than 3 cm.
3) Make the height of minipattern box and the camera equal.
4) Check the output voltage of the regulated power supply is the specified voltage ± 0.01 Vdc.
5) Check that the center of Siemens star chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Specified voltage: The specified voltage varies according to the minipattern box, so adjust the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

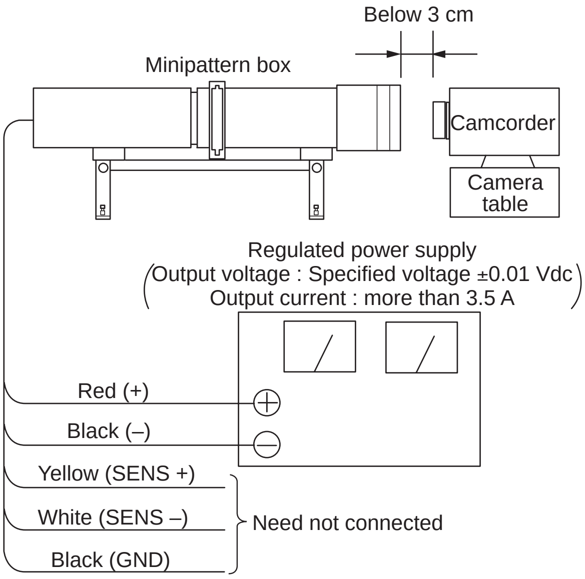


Fig. 6-1-8

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	13	Press PAUSE button.
4	6	01	27	Press PAUSE button. (Note 7)
5	6	02		Check the data changes to “01”.

Note 7: The adjustment data will be automatically input to page: F, address: 32 to 42.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	01	00	
4				Turn OFF the main power supply.
5				Perform “Flange Back Check”.

3. Flange Back Adjustment (Using the flange back adjustment chart and subject more than 500 m Away)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment (1) RadarW

Mode	CAMERA
Subject	Flange back adjustment chart (2.0 m from the front of lens) (Luminance: 300 to 400 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	32 to 42

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Check that the data of page: 6, address: 02 is “00”.
If not, turn the power of unit OFF/ON.

Note 3: Perform the adjustment with the camcorder in horizontal state.

Note 4: Perform “HALL Adjustment” before this adjustment.

Switch setting:

1) NIGHT SHOT .... OFF

Preparations before adjustments:

1) Place the Flange back adjustment chart 2.0 m from the front of the lens.
2) Check that the center of Flange back adjustment chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	13	Press PAUSE button.
4	6	01	15	Press PAUSE button. (Note 5)
5	6	02		Check the data changes to “01”.

Note 5: The adjustment data will be automatically input to page: F, address: 32 to 42.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	01	00	
4				Turn OFF the main power supply.
5				Perform “Flange Back Adjustment (2)”.

3-2. Flange Back Adjustment (2) RadarW

Perform this adjustment after performing “Flange Back Adjustment (1)”.

Mode	CAMERA
Subject	Subject more than 500 m away (Subject with clear contrast such as buildings, etc.)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	32 to 42

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Check that the data of page: 6, address: 02 is “00”.
If not, turn the power of unit OFF/ON.

Switch setting:

1) NIGHT SHOT .... OFF

Preparations before adjustments:

1) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away.
(subjects with clear contrast such as building, etc.)
(Nearby subjects less than 500 m away should not be in the screen)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	13	Press PAUSE button.
4				Place ND filter on the lens so that the optimum image is obtain.
5	6	01	29	Press PAUSE button. (Note 3)
6	6	02		Check the data changes to “01”.

Note 3: The adjustment data will be automatically input to page: F, address: 32 to 42.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	01	00	
4				Turn OFF the main power supply.
5				Perform “Flange Back Check”.

4. Flange Back Check

Mode	CAMERA
Subject	Siemens star (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is “00”.

Switch setting:

1) NIGHT SHOT .... OFF

Note 2: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page: 1 of the adjusting remote commander.

1 : 00 : XX
Odd: Focused
Even: Unfocused

Checking method:

Order	Page	Address	Data	Procedure
1				Place the Siemens star 2.0 m from the front of the lens.
2				To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
3	6	40	01	
4	6	41	01	
5				Shoot the Siemens star with the zoom TELE end.
6				Turn on the auto focus.
7	0	03	0F	
8	1			Check that the lens is focused. (Note 2)
9	6	21	10	
10				Shoot the Siemens star with the zoom WIDE end.
11				Observe the TV monitor and check that the lens is focused.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	21	00	
2	6	40	00	
3	6	41	00	
4	0	03	00	

5. Optical Axis Adjustment

Correct a deviation of optical axis between the lens and the CCD imager.

If deviated, the screen center will be shifted when the lens is zoomed from TELE end to WIDE end.

Subject	Siemens Star
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	46

Note 1: Check that the data of page: 0, address: 10 is “00”.
Note 2: “Flange Back Adjustment” must be already finished.

Switch setting:

1) DIGITAL ZOOM (Menu display) .... OFF
2) STEADY SHOT (Menu display) .... OFF

Preparation for adjustment:

1) Play a monoscope portion of the System Check tape (WR5-5ND).
2) Stick the optical axis deviation specification frame to the monitor screen so that the center of monoscope coincides with the center of specification frame.
3) Select the CAMERA mode.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 46, and set data: 00, then press the PAUSE button on the adjusting remote commander.
3) Place the Siemens Star at 2 m position away from the lens.
4) Shoot the Siemens Star with the zoom at TELE end.
5) Change the lens direction so that the center of Siemens Star coincides with the center of optical axis deviation specification frame.
6) Shoot the Siemens Star with the zoom at WIDE end.
7) Check on the monitor TV which area the center of Siemens Star exists of the optical axis deviation specification frame.
   At this time, measure the amount of deviation “L1” (distance from the center of Siemens Star to the center of optical axis deviation specification frame).
8) From the following table, read correction data according to the area.

Area	Deviation Phase	Correction Data
1	22.6° to 67.5°	01
2	67.6° to 112.5°	02
3	112.6° to 157.5°	03
4	157.6° to 202.5°	04
5	202.6° to 247.5°	05
6	247.6° to 292.5°	06
7	292.6° to 337.5°	07
8	337.6° to 22.5°	08

9) Select page: F, address: 46, and set correction data, then press the PAUSE button on the adjusting remote commander.
10) Shoot the Siemens Star with the zoom at TELE end.
11) Change the lens direction so that the center of Siemens Star coincides with the center of optical axis deviation specification frame.
12) Shoot the Siemens Star with the zoom at WIDE end.
13) Measure the amount of deviation “L2” (distance from the center of Siemens Star to the center of optical axis deviation specification frame).
14) Compare L1 and L2, and make sure that the L2 is smaller than L1.
    If large, select page: F, address: 46, and set data: 00, then press the PAUSE button on the adjusting remote commander.

Processing after completion of adjustment:

1) Select page: 0, address: 01, and set data: 00.

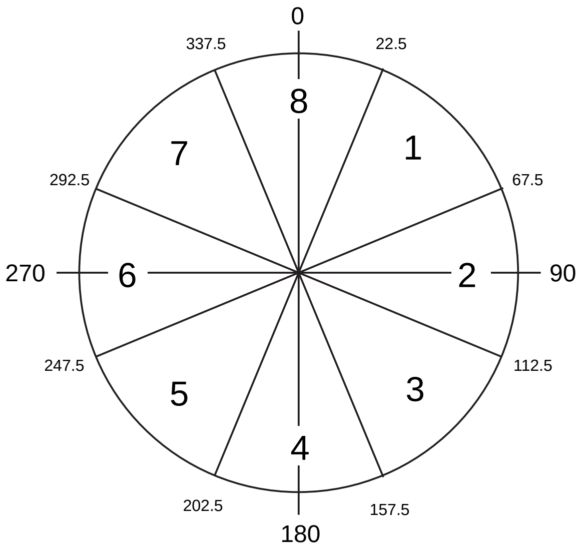


Fig. 6-1-9

6. Picture Frame Setting

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame) (1.5 m from the front of lens)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope and monitor TV
Specified Value	A=B, C=D, E=F

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Perform “Flange Back Adjustment” before this adjustment.

Switch setting:

1) NIGHT SHOT .... OFF
2) DIGITAL ZOOM (Menu setting) .... OFF
3) STEADY SHOT (Menu setting) .... OFF

Setting method:

1) Select page: 6, address: 48, and set data: 01.
2) Adjust the zoom and the camera direction, and set to the specified position.
3) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using “Color reproduction adjustment frame”.

Processing after Completing Camera System Adjustments:

1) Select page: 6, address: 48, and set data: 00.

Check on the oscilloscope

1. Horizontal period

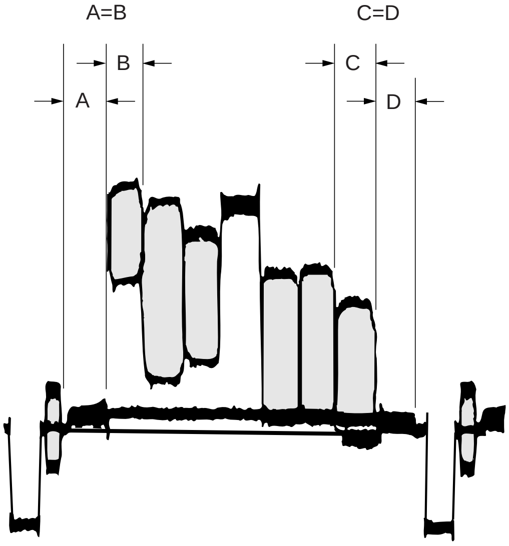


Fig. 6-1-10

2. Vertical period

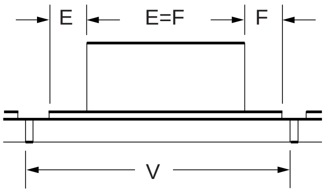


Fig. 6-1-11

Check on the monitor TV (Underscanned mode)

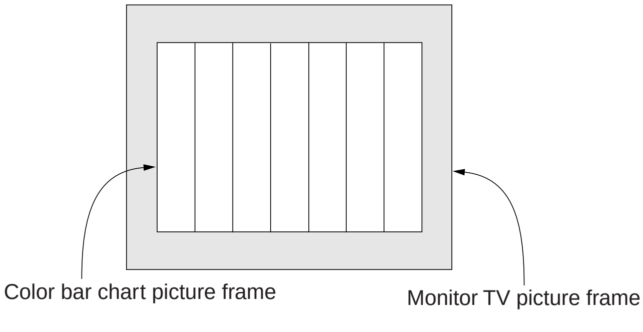


Fig. 6-1-12

7. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that proper color reproduction is produced.

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	23, 25, 2A, 2B
Specified Value	All color luminance points should settle within each color reproduction frame.

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Perform “Flange Back Adjustment” before this adjustment.

Switch setting:

1) NIGHT SHOT .... OFF
2) DIGITAL ZOOM (Menu setting) .... OFF
3) STEADY SHOT (Menu setting) .... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	9D	29	
4	6	01	3D	Press PAUSE button.
5	F	80		Note down the data.
6	F	80	37	Press PAUSE button.
7				Adjust the GAIN and PHASE of the vectorscope, and set to the burst luminance point to the burst position of color reproduction frame.
8	F	23 25 2A 2B		Change the data and settle each color luminance point in each color reproduction frame. (Note 3)

Note 3: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses. If not, the new data will not be written to the memory.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	F	80		Set data noted down at step 5, and press PAUSE button.
2	6	01	00	Press PAUSE button.
3	6	48	00	
4	6	9D	00	
5	0	01	00	

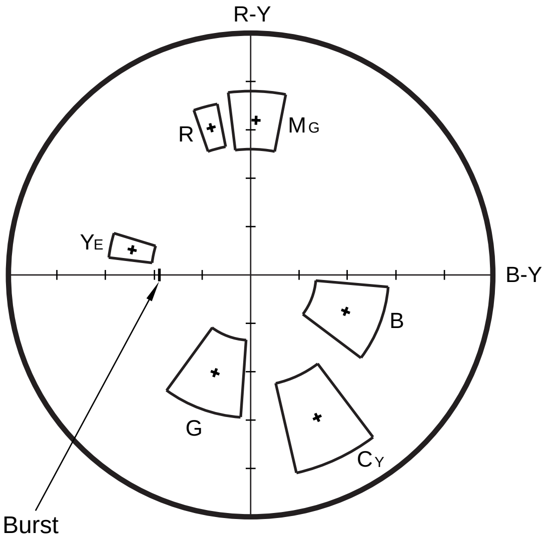


Fig. 6-1-13

8. LV Standard Data Input RadarW

Adjust the normal coefficient of the light value.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Displayed data of page: 1 (Note 4)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	18, 19
Specified Value	0FE0 to 1020

Note 1: Perform “Flange Back Adjustment” before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is “00”.
Note 3: Check that the data of page: 6, address: 02 is “00”.
If not, turn the power of unit OFF/ON.
Note 4: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
Displayed data

Switch setting:

1) NIGHT SHOT .... OFF
2) DIGITAL ZOOM (Menu setting) .... OFF
3) STEADY SHOT (Menu setting) .... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	0D	Press PAUSE button. (Note 5)
4	6	02		Check the data changes to “01”.
5	0	03	1E	
6	1			Check that the displayed data (Note 4) satisfied specified value.

Note 5: The adjustment data will be automatically input to page: F, address: 18 and 19.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	03	00	
4	0	01	00	

9. Auto White Balance Standard Data Input RadarW

Adjust the white balance reference at 3200K.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	1A to 1D

Note 1: Perform “Color Reproduction Adjustment” before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is “00”.
Note 3: Check that the data of page: 6, address: 02 is “00”.
If not, turn the power of unit OFF/ON.

Switch setting:

1) NIGHT SHOT .... OFF
2) DIGITAL ZOOM (Menu setting) .... OFF
3) STEADY SHOT (Menu setting) .... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	48	01	
3	6	01	11	Press PAUSE button.
4	6	01	0B	Press PAUSE button. (Note 4)
5	6	02		Check the data changes to “01”.

Note 4: The adjustment data will be automatically input to page: F, address: 1A to 1D.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	01	00	

10. Auto White Balance Adjustment RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Displayed data of page: 1 (Note 5)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	1E to 21, 2E to 31
Specified value	TYPE PA model R ratio: 2C70 to 2CF0 B ratio: 5A14 to 5A94 TYPE SO model R ratio: 2C20 to 2CA0 B ratio: 58C0 to 5940

Note 1: Perform the Auto White Balance Adjustment after checking the type of CCD imager by the following method.

[Checking of CCD imager type]

Type of CCD imager can be identified with its serial No..
Check the serial No. printed on the MODEL NUMBER LABEL.

Serial No.	CCD type
310001 to 310300, 320071 to 341220, 341521 to 341720, 342421 to 342720, 820001 to 821100, 850001 to 854200, 860001 to 863400, 940001 to 940600	TYPE SO
1320001 to 1333500	TYPE PA

Note 2: Perform "Auto White Blanace Standard Data Input" before this adjustment.
Note 3: Check that the data of page: 0, address: 10 is "00".
Note 4: Check that the data of page: 6, address: 02 is "00". If not, turn the power of unit OFF/ON.
Note 5: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
Displayed data

Switch setting:

1) NIGHT SHOT .... OFF
2) DIGITAL ZOOM (Menu setting) .... OFF
3) STEADY SHOT (Menu setting) .... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	48	01	
4	F	2E	2C	Press PAUSE button.
5	F	2F	B0/60	Press PAUSE button. (Note 6)
6	F	30	5A/59	Press PAUSE button. (Note 6)
7	F	31	54/00	Press PAUSE button. (Note 6)
8	6	01	83	Press PAUSE button.
9	6	01	81	Press PAUSE button. (Note 7)
10	6	02		Check the data changes to "01".
11	6	01	3F	Press PAUSE button.
12	0	03	04	
13	1			Check that the displayed data (Note 5) satisfied the R ratio specified value.
14	0	03	05	
15	1			Check that the displayed data (Note 5) satisfied the B ratio specified value.

Note 6: TYPE PA model / TYPE SO model
Note 7: The adjustment data will be automatically input to page: F, address: 1E to 21.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	48	00	
3	0	03	00	
4	0	01	00	
5				Remove the C14 filter on the lens.

11. Auto White Balance Check RadarW

Mode	CAMERA	
Subject	Clear chart (Color reproduction adjustment frame)	
Filter	Filter C14 for color temperature correction ND filter 1.0, 0.4 and 0.1	
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)	Displayed data of page: 1 (Note 3)
Measuring Instrument	Vectorscope	Adjusting remote commander
Specified Value	Fig. 6-1-14 (A) and (B)	LV data: 8000 to 8BC0

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Perform "Auto White Balance Adjustment" before this adjustment.

Note 3: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
Displayed data

Switch setting:

1) NIGHT SHOT .... OFF
2) DIGITAL ZOOM (Menu setting) .... OFF
3) STEADY SHOT (Menu setting) .... OFF

Checking method:

Order	Page	Address	Data	Procedure
1				Check that the lens is not covered with either filter.
2	6	48	01	
INDOOR luminance point check				
3	6	01	0F	Press PAUSE button.
4				Check that the center of the white luminance point within the circle shown Fig. 6-1-14 (A).
5	6	01	00	Press PAUSE button.
OUTDOOR luminance point check				
6	6	01	3F	Press PAUSE button.
7				Place the C14 filter on the lens.
8				Check that the center of the white luminance point within the circle shown Fig. 6-1-14 (B).
LV data check				
9				Remove the C14 filter, and place the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.
10	6	01	00	Press PAUSE button.
11	0	03	06	
12	1			Check that the displayed data (Note 3) satisfied the LV data specified value.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	48	00	
2	0	03	00	
3				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

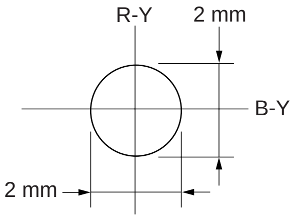


Fig. 6-1-14 (A)

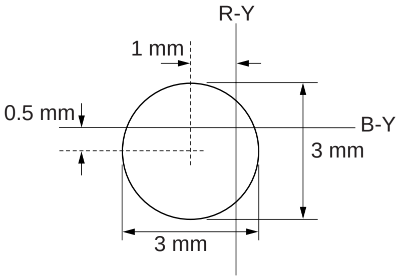


Fig. 6-1-14 (B)

12. Angular Velocity Sensor Output Check and Steadyshot Check

RadarW

Check the angular velocity sensor output.

Precautions on the Parts Replacement

There are two types of repair parts.

Type A	ENC03JA
Type B	ENC03JB

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations.

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Mode	CAMERA
Subject	Not required
Measurement Point	Displayed data of page: 1 (Note 2)
Measuring Instrument	Adjusting remote commander
Specified value	PITCH data: 2400 to 5200 YAW data: 2400 to 5200

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX

Displayed data

Switch setting:

1) ZOOM .... TELE end
2) STEADYSHOT (Menu setting) .... ON

Checking method:

Order	Page	Address	Data	Procedure
PITCH sensor output check (SE751 of SI-035 board)				
1	0	03	11	
2	1			With the set in still state, check that the displayed data (Note 2) satisfies the PITCH data specified value.
YAW sensor output check (SE752 of SI-035 board)				
3	0	03	12	
4	1			With the set in still state, check that the displayed data (Note 2) satisfies the YAW data specified value.
5	0	03	00	
Steady shot operation check				
6				Shake the set vertically and horizontally to check that the steady shot function operates normally.

COVER

1-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

Before perform the viewfinder system adjustments, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.

Note 2: Perform the following data setting before the viewfinder system adjustments.
1) Select page: 3, address: C4, and set data: 67.
2) Select page: 3, address: C5, and set data: 01.
Reset the data after completing adjustment.
1) Select page: 3, address: C4, and set data: 00.
2) Select page: 3, address: C5, and set data: 00.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN1011 of the VC-305 board.
Connect the measuring instruments via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A).

The following table shows the pin No. and signal name of CN1011.

Pin No.	Signal Name	Pin No.	Signal Name
1	FRRV	9	RF MON
2	8 mm PB RF	10	REG GND
3	BPF MONI	11	N.C.
4	CAP FG	12	N.C.
5	RF SWP	13	XLANC POWER ON
6	REG GND	14	EVF VG
7	XLANC JACK IN	15	VCO
8	REG GND	16	LANC SIG

Table 6-1-2

The following table lists the test point of I/F unit of for LANC control.

Pin No.	Signal Name	Pin No.	Signal Name
	BL	15	EVF VCO
14	EVF VG		BL 4.75
9	PB RF (MON)		
3	BPF MONI	6, 8, 10	GND
	TMS	7	REC RF (RF IN)
	TDI		TDO
5	SWP		TCK
4	CAP FG	2	IR VIDEO

Note: Pin No. are those of CN1011.

Table 6-1-3

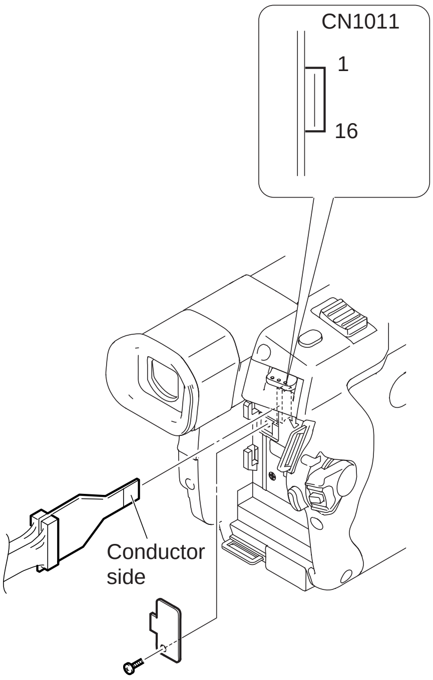


Fig. 6-1- 15

1. VCO Adjustment (VC-305 board)

Set the VCO free-run frequency. If deviated, the EVF screen will be blurred.

Mode	CAMERA
Subject	Not required
Measurement Point	EVF VCO (Pin ⑮ of CN1011)
Measuring Instrument	Frequency counter
Adjustment Page	C
Adjustment Address	36, 37
Specified Value	f = 15734 ± 30 Hz

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	36		Change the data and set the frequency (f) to the specified value.
3	C	36		Press PAUSE button.
4	C	36		Read the data and this data is named D_{36}.
5				Convert D_{36} to decimal notation, and obtain D_{36}’. (Note 2)
6				Calculate D_{37}’ using following equations. (decimal calculation) D_{37}’ = D_{36}’ + 19
7				Convert D_{37}’ to a hexadecimal number, and obtain D_{37}. (Note 2, 3)
8	C	37	D_{37}	Press PAUSE button.
9	0	01	00	

Note 2: Refer to table 6-4-1. “Hexadecimal-decimal conversion table”

Note 3: If D_{37}’ > 255, then D_{37} = FF

2. RGB AMP Adjustment (VC-305 board)

Set the D Range of the RGB decoder for driving the LCD to the specified value.
If deviated, the EVF screen image will be blackish or saturated (whitish).

Note: Do either of the automatic adjustment or manual adjustment.

2-1. Automatic Adjustment RadarW

Mode	CAMERA
Subject	Not required
Adjustment Page	C
Adjustment Address	39

Note 1: Check that the data of page: 0, address: 10 is “00”.

Switch setting:

1) PANEL OPEN/CLOSE .... CLOSE (LCD panel turns off)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	01	50	Press PAUSE button. (Note 2)
3	3	02		Check the data changes to “00”.
4	0	01	00	

Note 2: The adjustment data will be automatically input to page: C, address: 39.

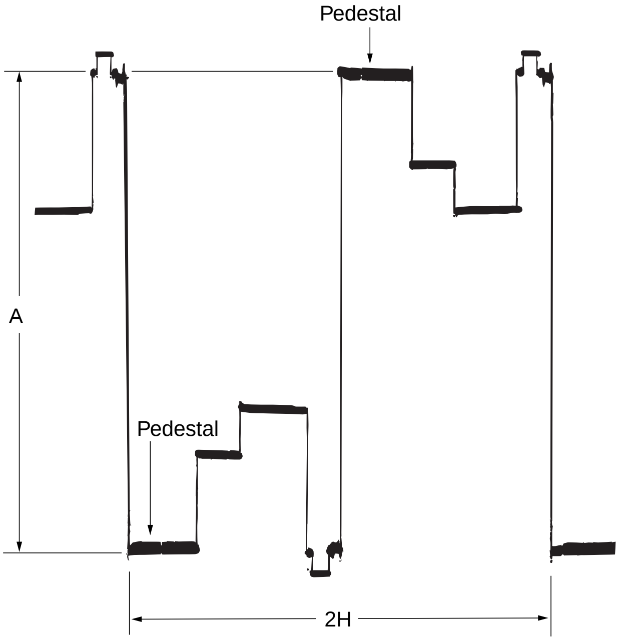
2-2. Manual Adjustment

Mode	CAMERA
Subject	Not required
Measurement Point	EVF VG (Pin ⑭ of CN1011)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	39
Specified Value	A = 7.50 ± 0.10 Vp-p

Note: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	39		Change the data and set the voltage (A) to the specified value.
3	C	39		Press PAUSE button.
4	0	01	00	



A: Between the reversed waveform pedestal and non-reversed waveform pedestal

Fig. 6-1-16

3. Contrast Adjustment (VC-305 board)

Set the video signal level for driving the LCD to the specified value.
If deviated, the EVF screen image will be blackish or saturated (whitish).

Note: Do either of the automatic adjustment or manual adjustment.

3-1. Automatic Adjustment RadarW

Mode	CAMERA
Subject	Not required
Adjustment Page	C
Adjustment Address	3E

Note 1: Check that the data of page: 0, address: 10 is “00”.

Switch setting:

1) PANEL OPEN/CLOSE .... CLOSE (LCD panel turns off)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	01	51	Press PAUSE button. (Note 2)
3	3	02		Check the data changes to “00”.
4	0	01	00	

Note 2: The adjustment data will be automatically input to page: C, address: 3E.

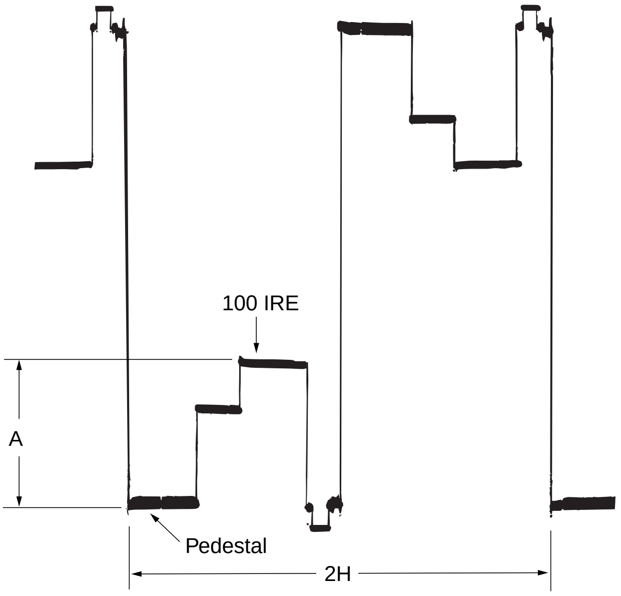
3-2. Manual Adjustment

Mode	CAMERA
Subject	Not required
Measurement Point	EVF VG (Pin ⑭ of CN1011)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	3E
Specified Value	A = 2.55 ± 0.1 Vp-p

Note: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	3E		Change the data and set the voltage (A) to the specified value. (The data should be “00” to “7F”)
3	C	3E		Press PAUSE button.
4	0	01	00	



A: Between the pedestal (0 IRE) and 100 IRE

Fig. 6-1-17

1-5. LCD SYSTEM ADJUSTMENTS

Before perform the LCD system adjustments, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note 3: Set the LCD BRIGHT (Menu setting) to the center.
Set the LCD B.L. (Menu setting) to the BRT NORMAL.
Set the LCD COLOR (Menu setting) to the center.

[Adjusting connector]

Most of the measuring points for adjusting the LCD display are concentrated in the following connector.
CN5502 of the PD-180 board
Connect the Measuring Instruments via the multi CPC jig (J-6082-311-A).
The following table shows the Pin No. and signal name of the connector.

Pin No.	Signal Name	Pin No.	Signal Name
1	VB	2	XVD OUT
3	VG	4	PANEL COM
5	VR	6	PANEL_ID
7	C-SYNC/XHD	8	XHD OUT
9	GND	10	GND

[LCD type check]

By measuring the resistor value between Pin ⑥ of CN5502 and Pin ⑩ of CN5502, the type of LCD can be discriminated.

PD-180 board CN5502

Resistor value	LCD type
2.2 kΩ	TYPE S
3.3 kΩ	TYPE C

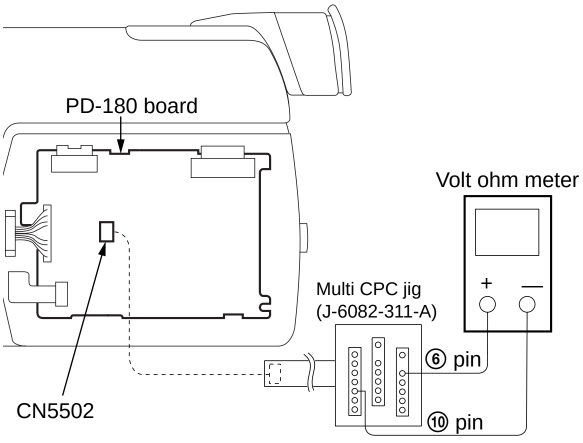


Fig. 6-1-18

1. VCO Adjustment (PD-180 board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ⑧ of CN5502 (XHD OUT)
Measuring Instrument	Frequency counter
Adjustment Page	C
Adjustment Address	47, 48
Specified Value	f=15734 ± 30 Hz

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	47		Change the data and set the frequency (f) to the specified value.
3	C	47		Press PAUSE button.
4	C	47		Read the data and this data is named D_{47}.
5				Convert D_{47} to decimal notation, and obtain D_{47}'. (Note 2)
6				Calculate D_{48}' using following equations. (decimal calculation) $D_{48}' = D_{47}' + 18$
7				Convert D_{48}' to a hexadecimal number, and obtain D_{48}. (Note 2, 3)
8	C	48	D_{48}	Press PAUSE button.
9	0	01	00	

Note 2: Refer to table 6-4-1. “Hexadecimal-decimal conversion table”

Note 3: If $D_{48}' > 255$, then D_{48} = FF

2. RGB AMP Adjustment (PD-180 board)

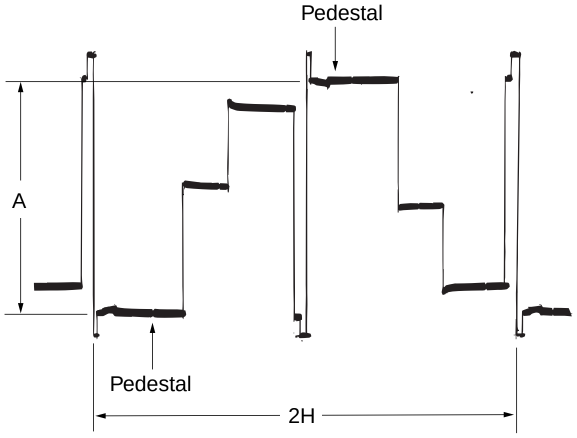
Set the D range of the RGB driver used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ③ of CN5502 (VG) External trigger : Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	4A
Specified Value	A=3.50 ± 0.05 Vp-p (TYPE S model) A=2.92 ± 0.05 Vp-p (TYPE C model)

Note: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	4A		Change the data and set the voltage (A) to the specified value. (The data of address: 4A, should be “00” to “3F”)
3	C	4A		Press PAUSE button
4	0	01	00	



A: Between the reversed waveform pedestal and non-reversed waveform pedestal

Fig. 6-1-19

3. Contrast Adjustment (PD-180 board)

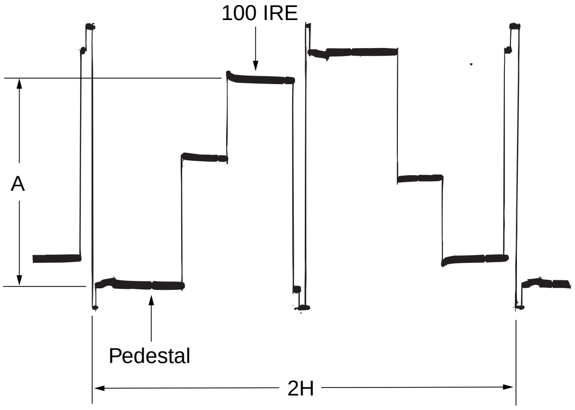
Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ③ of CN5502 (VG) External trigger : Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	4F
Specified Value	A=3.30 ± 0.05 Vp-p (TYPE S model) A=2.75 ± 0.05 Vp-p (TYPE C model)

Note: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	4F		Change the data and set the voltage (A) to the specified value. (The data of address: 4F, should be “00” to “7F”)
3	C	4F		Press PAUSE button.
4	0	01	00	



A: Between the pedestal (0 IRE) and 100 IRE

Fig. 6-1-20

4. COM AMP Adjustment (PD-180 board)

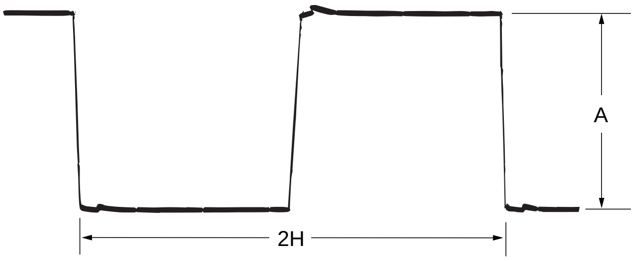
Set the common electrode drive signal level of LCD to the specified value.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	4C
Specified Value	A=6.40 ± 0.05 Vp-p (TYPE S model) A=5.58 ± 0.05 Vp-p (TYPE C model)

Note: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	4C		Change the data and set the voltage (A) to the specified value.
3	C	4C		Press PAUSE button.
4	0	01	00	



A: PANEL COM signal level

Fig. 6-1-21

5. V-COM Adjustment (PD-180 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.

If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	C
Adjustment Address	49

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Perform “RGB AMP Adjustment”, ”Contrast Adjsutment” and “COM AMP Adjustment” before this Adjsutment.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	49		Change the data so that brightness of the section A and section B is equal.
3	C	49		Subtract 8 from the data.
4	C	49		Press PAUSE button.
5	0	01	00	

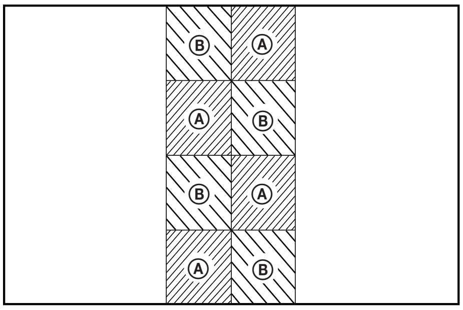


Fig. 6-1-22

6. White Balance Adjustment (PD-180 board)

Correct the white balance.
If deviated, the LCD screen color cannot be reproduced.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	C
Adjustment Address	4D, 4E
Specified Value	The LCD screen should not be colored.

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Check the white balance only when replacing the following parts. If necessary, adjust them.

1. LCD panel
2. Light induction plate
3. IC5501

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	4D	87	Press PAUSE button.
3	C	4E	68	Press PAUSE button.
4				Check that the LCD screen is not colored. If not colored, proceed to step 6.
5	C	4D 4E		Change the data so that the LCD screen is not colored. (Note 3)
6	0	01	00	

Note 3: To write in the non-volatile memory (EEPROM), press the PAUSE button each time to set the data.

COVER

6-2. MECHANISM SECTION ADJUSTMENTS

Mechanism Section adjustments, checks, and replacement of mechanism parts, refer to the separate volume "8mm Video Mechanical Adjustment Manual IX M2000 Mechanism ".

2-1. ADJUSTMENT REMOTE COMMANDER

Connect the adjustment remote commander to CN1011 of VC-305 board via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A). The "Jig Modification" is necessary for connecting the adjustment remote commander to this set. Modify the jig by referring to page 6-5.
To operate the adjustment remote commander, connect the AC power adapter (8.4Vdc) to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.

2-2. HOW TO ENTER RECORD MODE WITHOUT CASSETTE

1) Connect the adjustment remote commander.
2) Turn the HOLD switch of the adjustment remote commander to the ON position.
3) Close the cassette compartment without the cassette.
4) Select page: 3, address: 01, and set data: 0C, and press the PAUSE button of the adjustment remote commander.
   (The mechanism enters the record mode automatically.)
   Note: The function buttons becomes inoperable.
5) To quit the record mode, select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander. (Whenever you want to quit the record mode, be sure to quit following this procedure.)

2-3. HOW TO ENTER PLAYBACK MODE WITHOUT CASSETTE

1) Connect the adjustment remote commander.
2) Turn the HOLD switch of the adjustment remote commander to the ON position.
3) Close the cassette compartment without the cassette.
4) Select page: 3, address: 01, and set data: 0B, and press the PAUSE button of the adjustment remote commander.
   (The mechanism enters the playback mode automatically.)
   Note: The function buttons becomes inoperable.
5) To quit the playback mode, select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander. (Whenever you want to quit the playback mode, be sure to quit following this procedure.)

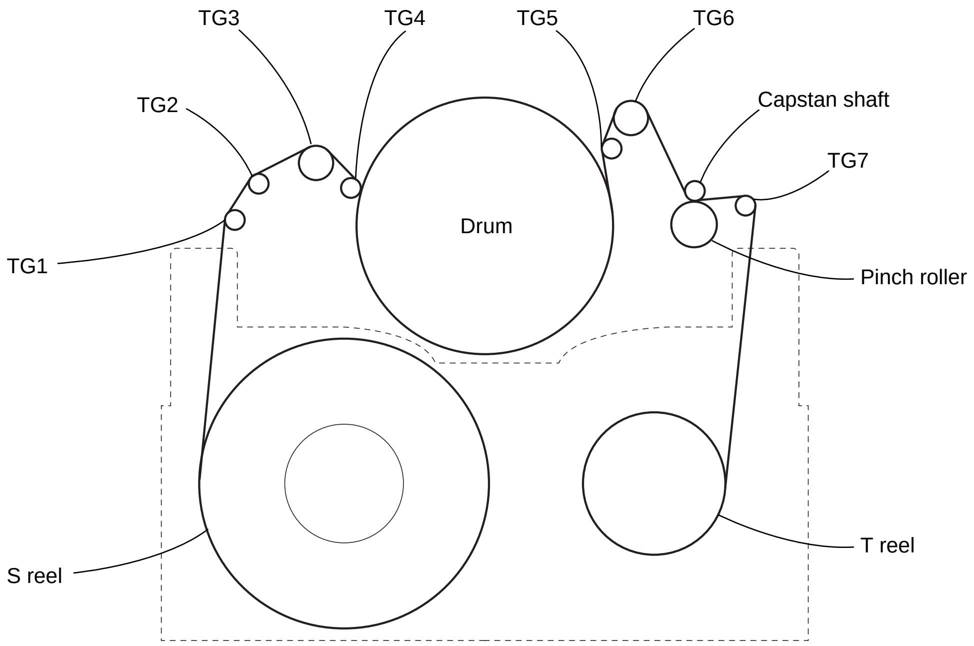


Fig. 6-2-1

2-4. TAPE PATH ADJUSTMENT

2-4-1. Preparations for Adjustment

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjustment remote commander.
3) Turn on the HOLD switch of the adjustment remote commander.
4) Select page: 3, address: 33, and set data: 08.
5) Connect the oscilloscope to I/F unit for LANC control.
   Channel 1: PB RF (MON)
   Channel 2: SWP
   Note: Connect a 75 Ω resistor between the test point PB RF (MON) and GND.
   75 Ω resistor (Parts code: 1-247-804-11)
6) Playback the SW/OL standard tape. (WR5-2D)
7) Check that the oscilloscope RF waveform is flat at the entrance and exit.
   If not flat, perform the following section 2-4-2. until it is flat.
8) Perform “Processing after operations”, after completing adjustment.

Test point of I/F unit for LANC control

Pin No.	Signal Name	Pin No.	Signal Name
	BL	15	EVF VCO
14	EVF VG		BL 4.75
9	PB RF (MON)		
3	BPF MONI	6, 8 ,10	GND
	TMS	7	REC RF (RF IN)
	TDI		TDO
5	SWP		TCK
4	CAP FG	2	IR VIDEO

Note: Pin No. are those of CN1011.

Table 6-2-1.

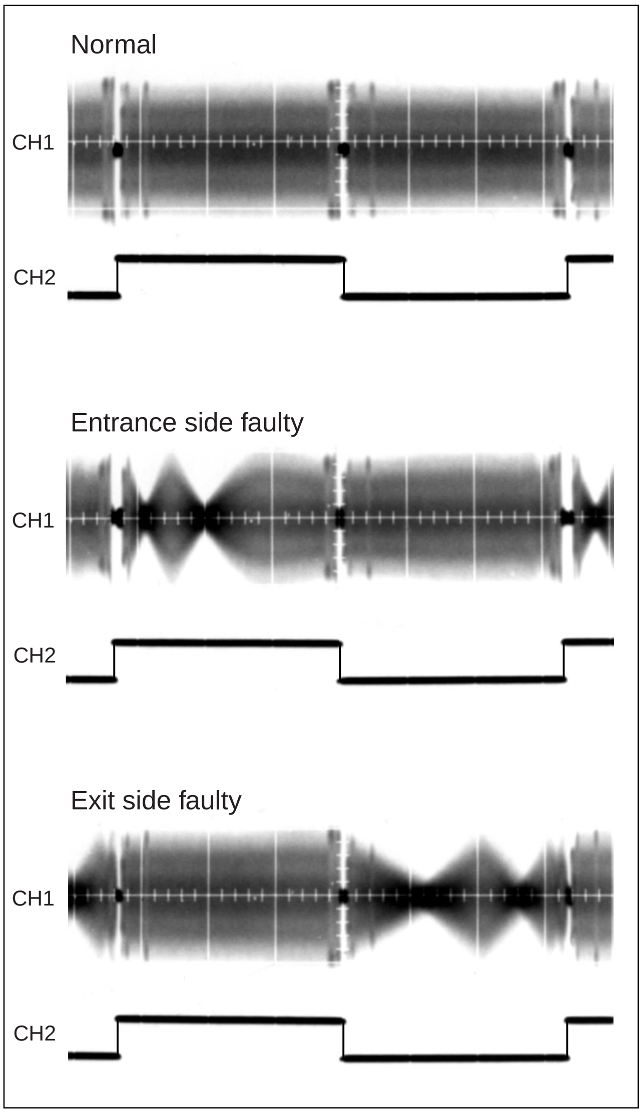


Fig. 6-2-2

[Processing after operations]

1) Connect the adjustment remote commander, and turn on the HOLD switch.
2) Select page: 3, address: 33, and set data: 00.
3) Remove the power supply from the unit.

2-4-2. Tape Path Adjustment

1) Playback the SW/OL standard tape. (WR5-2D)
2) Turn the tape guide No.3 and No.6 alternately until the waveform becomes flat. (Fig. 6-2-5)
   Note: Zenith adjustment screws for the TG3 and TG6 do not need to be adjusted.

[Entrance side adjustment]

3) Turn the No.3 guide slowly in the clockwise direction until the waveform amplitude at the entrance side begins to become small. (Fig. 6-2-6 (A))
   Confirm the rotation angle (A) of the No.3 guide.
4) Turn the No.3 guide slowly in the counterclockwise direction until the waveform becomes flat. (Fig. 6-2-5)
5) Turn the No.3 guide slowly in the counterclockwise direction until the waveform amplitude at the entrance side begins to become small. (Fig. 6-2-6 (B))
   Confirm the rotation angle (B) of the No.3 guide.
6) Turn the No.3 guide slowly in the clockwise direction and set up in the angle (C) in the middle of the rotation angle (A) and the rotation angle (B). (Fig. 6-2-4)

[Exit side adjustment]

7) Turn the No.6 guide slowly in the clockwise direction until the waveform amplitude at the exit side begins to become small. (Fig. 6-2-7 (A))
   Confirm the rotation angle (A) of the No.6 guide.
8) Turn the No.6 guide slowly in the counterclockwise direction until the waveform becomes flat. (Fig. 6-2-5)
9) Turn the No.6 guide slowly in the counterclockwise direction until the waveform amplitude at the exit side begins to become small. (Fig. 6-2-7 (B))
   Confirm the rotation angle (B) of the No.6 guide.
10) Turn the No.3 guide slowly in the clockwise direction and set up in the angle (C) in the middle of the rotation angle (A) and the rotation angle (B). (Fig. 6-2-4)

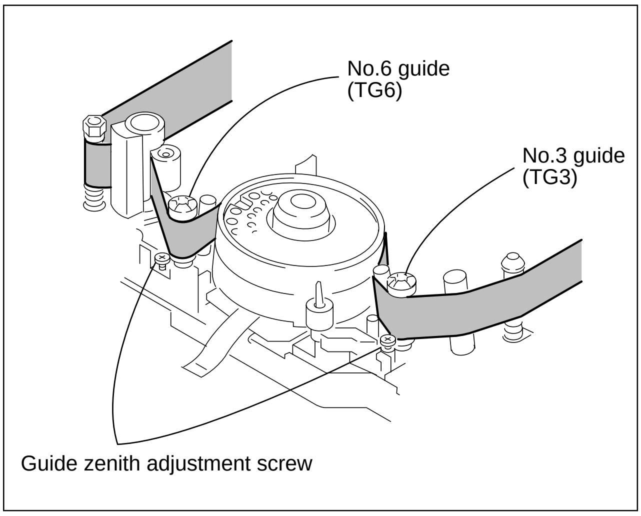


Fig. 6-2-3

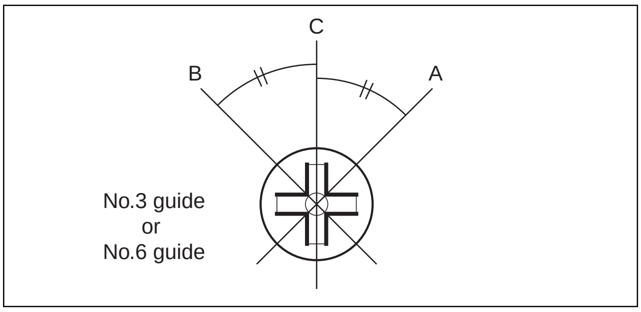


Fig. 6-2-4

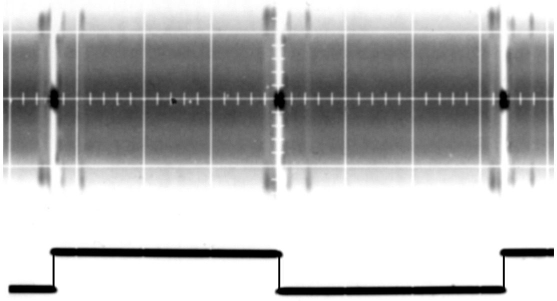


Fig. 6-2-5

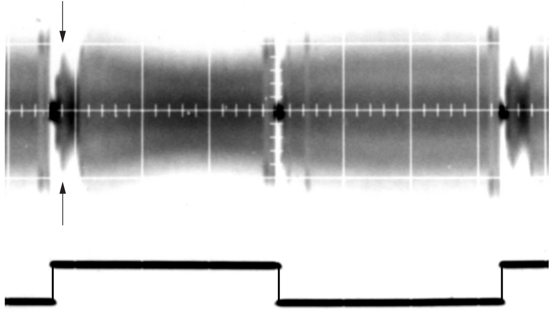


Fig. 6-2-6 (A)

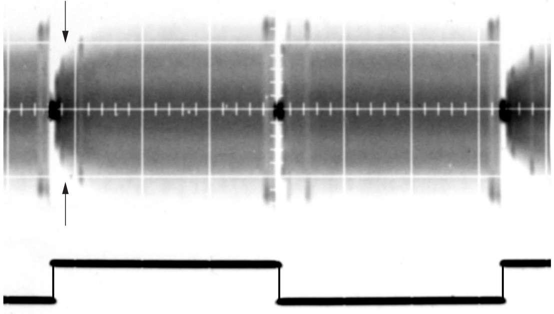


Fig. 6-2-6 (B)

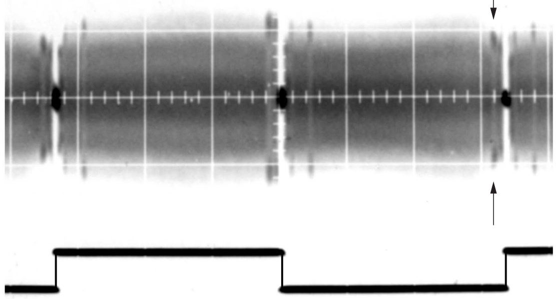


Fig. 6-2-7 (A)

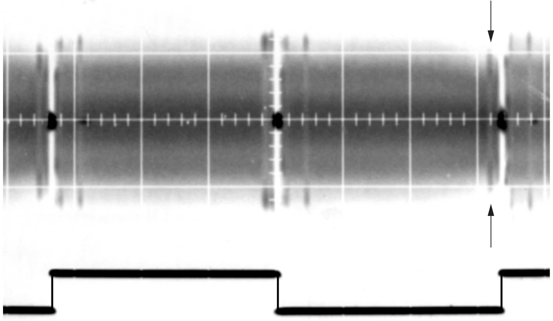


Fig. 6-2-7 (B)

2-4-3. No.7 Guide (TG7) Adjustment

1) Playback a tape in REV mode.
2) Confirm that tape slack dose not occur in between the guide No.6 (TG6) ① and capstan ②. If the tape slack is found, turn the height adjustment screw ④ of the Guide No.7 (TG7) ③ until tape slack is removed.
3) Playback a tape in normal mode. Confirm that tape slack dose not occur in between the guide No.7 (TG7) ③ and capstan ②. (Specification = 0.5 mm or less) If the tape slack of more than 0.5 mm is found, turn the height adjustment screw ④ until the slack is 0.5 mm or less. Playback a tape in REV mode and confirm that tape slack occurred in between the guide No.6 (TG6) ① and capstan ② is 0.3 mm or less, the adjustment is complete.

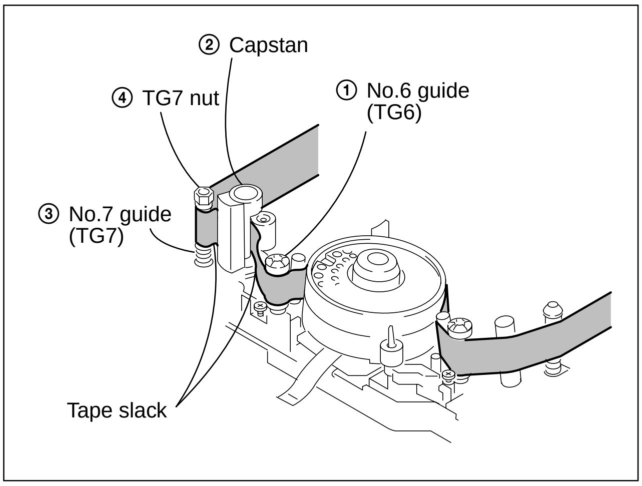


Fig. 6-2-8

2-4-4. CUE, REV Waveforms Check

1) Playback the SW/OL standard tape (WR5-2D) in REV mode. Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform section “2-4-2. Tape path Adjustment” and section “2-4-3. No.7 Guide (TG7) Adjustment”.
2) Playback the SW/OL standard tape in CUE mode.
   Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform section “2-4-2. Tape path Adjustment”.

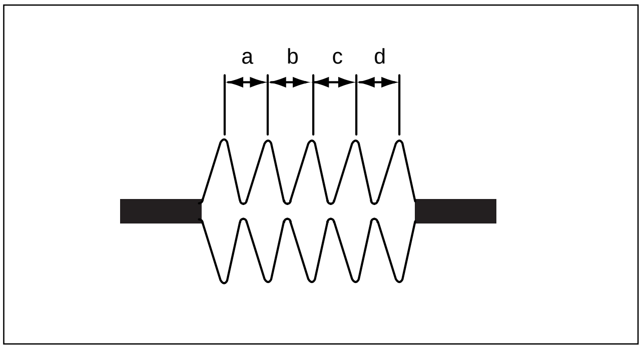


Fig. 6-2-9

2-5. CHECKS AFTER ADJUSTMENTS

2-5-1. Waveform Build-up Check

1) Playback the SW/OL standard tape.
2) Eject the tape once, insert and load the tape.
3) Start playing back the tape and confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack dose not occur near pinch roller.
4) Playback the tape in CUE/REV and FF/REW modes respectively. Confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack dose not occur near pinch roller.
5) Repeat the check items 2) to 5) again.

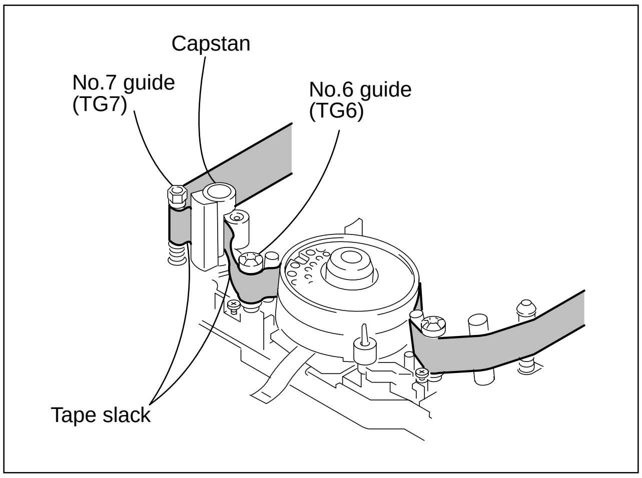


Fig. 6-2-10

2-5-2. Tape Path Check

1) Insert a thin video tape such as P6-120MP. Playback the thin tape. Confirm that there is no clearance or curl of 0.3 mm or more at the following points: Upper flange of guide No.3, upper flange of guide No. 6, upper and lower flanges of guide No.7.
2) Confirm that there is no clearance or curl of 0.3 mm or more at each tape guide when the FF button is pressed from the playback mode to enter the CUE mode, and when the REW button is pressed from the playback mode to enter the REV mode.

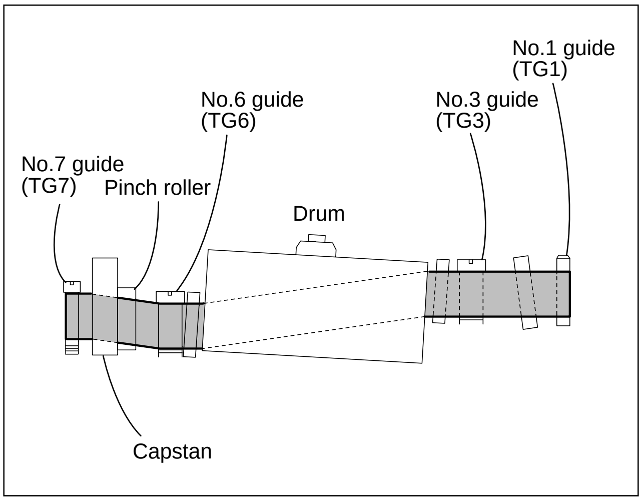


Fig. 6-2-11

COVER

6-3. VIDEO SECTION ADJUSTMENTS

3-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

3-1-1. Equipment to Required

1) TV monitor
2) Oscilloscope (dual-phenomenon, band width above 30 MHz with delay mode) (Unless specified otherwise, use a 10 : 1 probe)
3) Frequency counter
4) Digital voltmeter
5) Audio level meter
6) Regulated power supply
7) Digital8 alignment tapes
   - SW/OL standard (WR5-2D)
     Parts code: 8-967-993-22
   - Audio operation check for NTSC (WR5-3ND)
     Parts code: 8-967-993-32
   - System operation check for NTSC (WR5-5ND)
     Parts code: 8-967-993-42
8) Adjustment remote commander (J-6082-053-B)
9) CPC jig connector (J-6082-539-A) (Note)
10) I/F unit for LANC control (J-6082-521-A) (Note)

Note: The “Jig Modification” is necessary for connecting the adjustment remote commander to this set.

[Jig Modification]

Connect the LANC SIG pin of the I/F unit for LANC control to the land of pin 1 of the CPC jig connector with a jumper wire.
This modification is required in the DCR-TRV250 only. Be sure to disconnect the jumper wire when using the I/F unit for LANC control or CPC jig connector on other models.

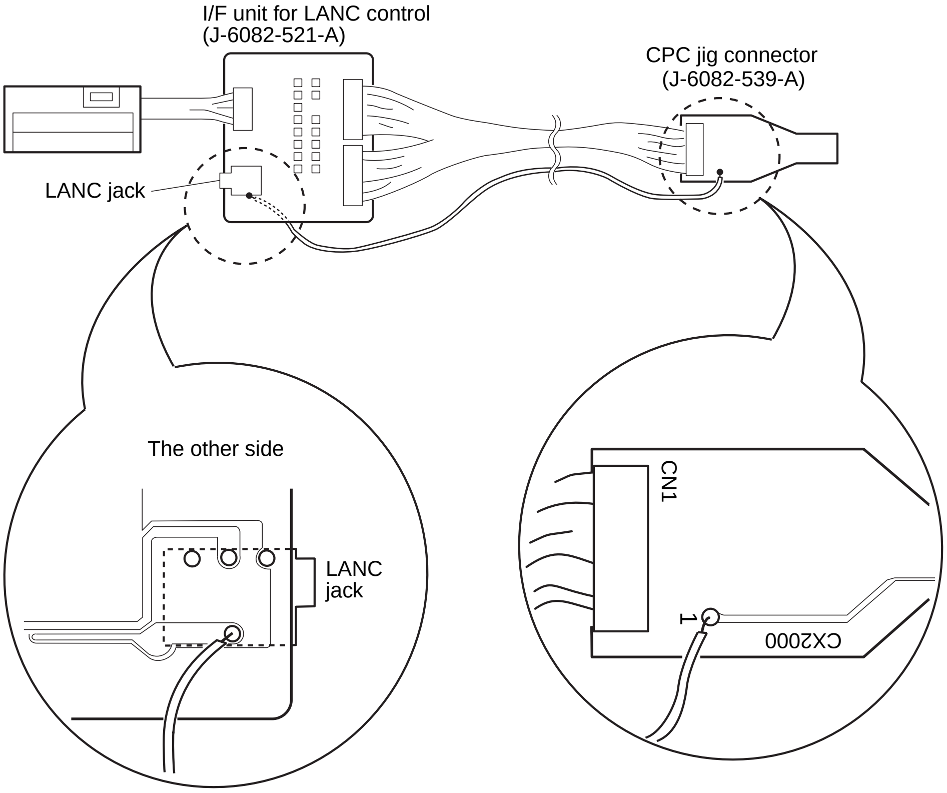


Fig. 6-3-1

3-1-2. Precautions on Adjusting

1) Connect the adjustment remote commander to CN1011 of VC-305 board via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A). The "Jig Modification" is necessary for connecting the adjustment remote commander to this set.
   Modify the jig by referring to page 6-43.
   To operate the adjustment remote commander, connect the AC power adapter to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.
2) The adjustments of this unit are performed in the VTR mode or camera mode.
   To set to the VTR mode, set the power switch to "VCR" or set the "Forced VTR Power ON mode" using the adjustment remote commander (Note 1).
   To set to the camera mode, set the power switch to "CAMERA" or set the "Forced Camera Power ON mode" using the adjustment remote commander (Note 2).
   After completing adjustments, be sure to exit the "Forced VTR Power ON Mode" or "Forced Camera Power ON Mode". (Note 3).
3) The front panel block (SI-035 board, microphone unit, video light) need not be connected. To remove, disconnect the following connector.
   VC-305 board CN1002 (28P, 0.5 mm)
4) As removing the cabinet (R) assembly (removing CN1007 of the VC-305 board) means removing the lithium 3 V power supply (CF-3000 block BT001), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) assembly has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data (data of page: 7, address: B0 to C6) and the data on history use (data of page: 7, address: A7 to A9 and C8 to CF). (Refer to "6-4.Service Mode".)
5) The cabinet (R) assembly (CF-3000 block, FK-3000 block, PD-180 board, LCD block) need not be connected to operate the VTR block. (Note 4) When removing the cabinet (R) assembly, disconnect the following connectors.
   1. VC-305 board CN1007 (18P, 0.5 mm)
   2. VC-305 board CN1003 (20P, 0.8 mm)
6) The lens block (CD-418 board) need not be connected. To remove, disconnect the following connectors.
   1. VC-305 board CN1501 (14P, 0.5 mm)
   2. VC-305 board CN1551 (24P, 0.5 mm)
7) The EVF block need not be connected. To remove, disconnect the following connectors.
   VC-305 board CN1005 (20P, 0.5 mm)
8) By setting the "Forced VTR Power ON mode" or "Forced Camera Power ON mode", the video section can be operate even if the control switch block (SS-3000) has been removed. When removing the control switch block (SS-3000), disconnect the following connector.
   VC-305 board CN1009 (12P, 0.8 mm)

Note 1: Setting the "Forced VTR Power ON" mode (VTR mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02, and press the PAUSE button.

The above procedure will enable the VTR power to be turned on with the control switch block (SS-3000) removed.
After completing adjustments, be sure to exit the "Forced VTR Power ON mode".

Note 2: Setting the "Forced Camera Power ON" mode (Camera mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button.

The above procedure will enable the camera power to be turned on with the control switch block (SS-3000) removed.
After completing adjustments, be sure to exit the "Forced Camera Power ON mode".

Note 3: Exiting the "Forced Power ON" mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button.
3) Select page: 0, address: 01, and set data: 00.

Note 4: When the FK-3000 block or the CF-3000 block is removed, the VTR does an unusual movement for one minute after the power is turned on. So, operate the VTR by the adjustment remote commander (with the HOLD switch set in the OFF position) after it passes for more than one minute.

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VC-305 board CN1011. Connect the measuring instruments via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A).
The following table shows the pin No. and signal name of CN1011.

Pin No.	Signal Name	Pin No.	Signal Name
1	FRRV	9	RF MON
2	8 mm PB RF	10	REG GND
3	BPF MONI	11	N. C.
4	CAP FG	12	N. C.
5	RF SWP	13	XLANC POWER ON
6	REG GND	14	EVF VG
7	XLANC JACK IN	15	VCO
8	REG GND	16	LANC SIG

Table 6-3-1

The following table lists the test point of I/F unit of for LANC control.

Pin No.	Signal Name	Pin No.	Signal Name
	BL	15	EVF VCO
14	EVF VG		BL 4.75
9	PB RF (MON)		
3	BPF MONI	6, 8, 10	GND
	TMS	7	REC RF (RF IN)
	TDI		TDO
5	SWP		TCK
4	CAP FG	2	IR VIDEO

Note: Pin No. are those of CN1011.

Table 6-3-2

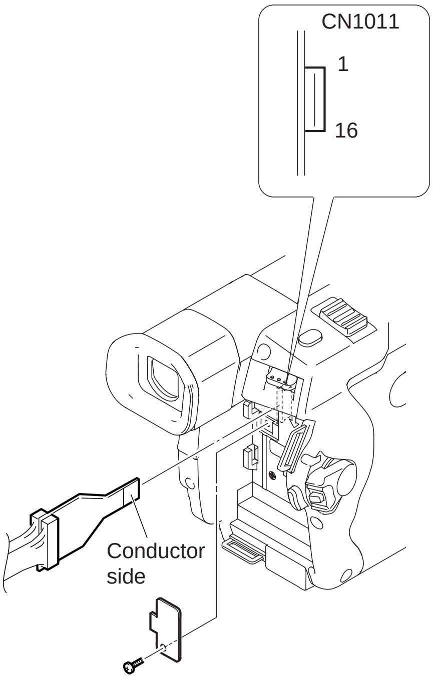

CN1011
1
16
Conductor side

Fig. 6-3-2

3-1-4. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 6-3-3 and perform the adjustments.

Connecting the TV Monitor and Adjustment Remote Commander

Note 1: The “Jig Modification” is necessary for connecting the adjustment remote commander to this set.
Modify the jig by referring to page 6-43.
Note 2: Use either the AC power adaptor or the InfoLITHIUM battery as the power supply of I/F unit for LANC control.

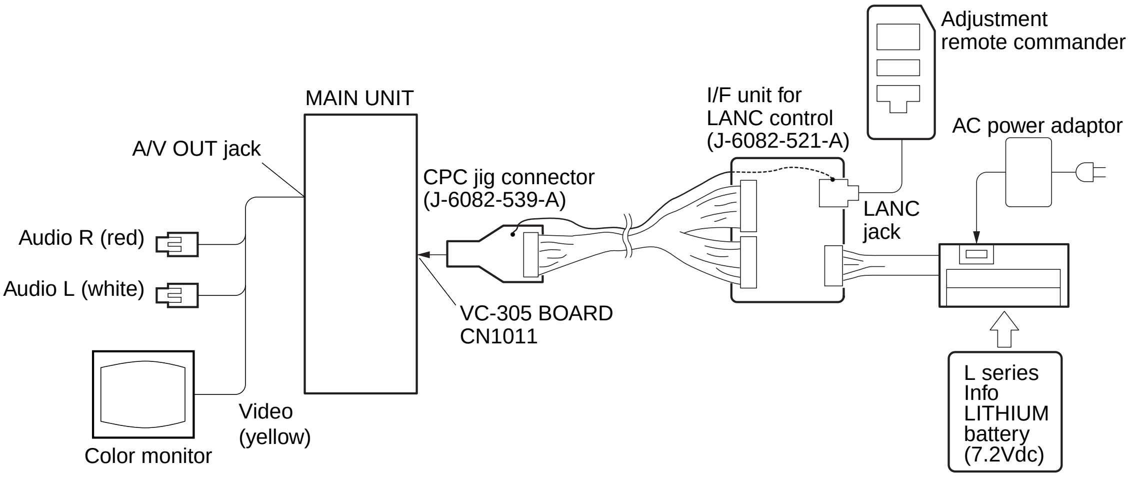

Adjustment remote commander
MAIN UNIT
I/F unit for LANC control (J-6082-521-A)
AC power adaptor
A/V OUT jack
CPC jig connector (J-6082-539-A)
LANC jack
Audio R (red)
Audio L (white)
VC-305 BOARD CN1011
L series Info LITHIUM battery (7.2Vdc)
Video (yellow)
Color monitor

Fig. 6-3-3

3-1-5. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Fig. 6-3-4 Shows the color bar signals recorded on the alignment tape.

Note: Measure using the VIDEO terminal (Terminated at 75 Ω).

Digital8 alignment tape

Name	Usage
SW/OL standard (WR5-2D)	Switching position adjustment
Audio operation check	Audio system adjustment
WR5-3ND	
System operation check	Operation check
WR5-5ND	

Table 6-3-3

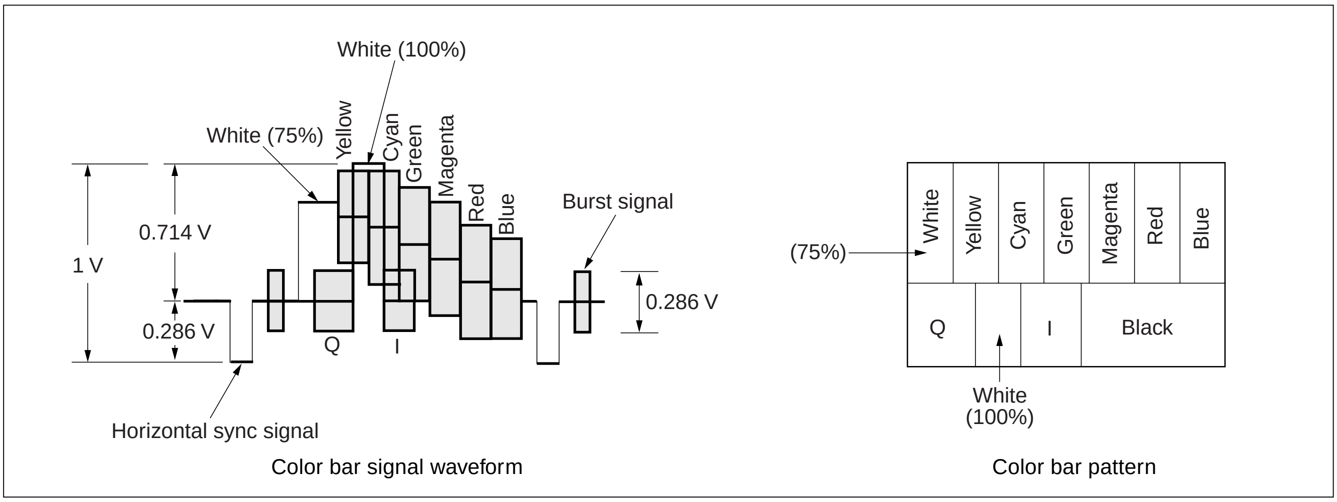

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.714 V
1 V
0.286 V
Q
I
0.286 V
Horizontal sync signal
Color bar signal waveform
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
I
Black
White
(100%)
Color bar pattern

Fig. 6-3-4 Color Bar Signal of the Alignment Tape

3-1-6. Input/output Level and Impedance

S video output
- 4-pin mini DIN
- Luminance signal:
  - 1 Vp-p, 75 Ω, unbalanced, sync negative
- Chrominance signal:
  - 0.286 Vp-p, 75 Ω, unbalanced

Audio/Video output
- AV MINIJACK
- Video
  - 1 Vp-p, 75Ω, unbalanced, sync negative
- Audio
  - 327 mV, (at load impedance 47 kΩ)
  - Output impedance less than 2.2 kΩ

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Initialization of 8, A, B, C, D, E, F, 18, 1B, 1C, 1F Page Data

If the 8, A, B, C, D, E, F, 18, 1B, 1C, 1F page data is erased due to some reason, perform “1-2. INITIALIZATION OF 8, A, B, C, D, E, F, 18, 1B, 1C, 1F PAGE DATA” of “6-1. CAMERA SECTION ADJUSTMENT”

2. Node Unique ID No. Input

Note 1: Perform “2-2. Input of Serial No.” if the data on page C has been cleared and the node unique ID No. is not found.

Note 2: Check that the data of page: 0, address: 10 is “00”.

2-1. Input of Company ID

Write the company ID to the EEPROM (nonvolatile memory).

Page	C
Address	E0, E1, E2, E3, E4

Input method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: C, and enter the following data.

Note 3: Each time the data is set, press the PAUSE button on the adjusting remote commander.

Address	Data
E0	08
E1	00
E2	46
E3	01
E4	02

3) Select page: 0, address: 01, and set data: 00.

2-2. Input of Serial No.

Write the serial No. and model code to the EEPROM (nonvolatile memory).

In writing the serial No., a decimal number should be converted into a hexadecimal number.

Page	C
Address	E5, E6, E7

1) Select page: 0, address: 01, and set data: 01.
2) Read the serial No. from the model name label, and it is assumed to be D_1.
   Example: If serial No. is “77881”,
   $D_1 = 77881$
3) From Table 6-3-4, obtain D_2 and H_1 that correspond to D_1.
   Example: If $D_1 = 77881$,
   $D_2 = D_1 - 65536 = 12345$
   $H_1 = \text{FE}$

D_1 (decimal)	D_2 (decimal)	H_1 (hexadecimal) (Service model code)
00001 to 65535	D_1	FE
65536 to 131071	$D_1 - 65536$	FE
131072 to196607	$D_1 - 131072$	FE
196608 to 262143	$D_1 - 196608$	FE
262144 to 327679	$D_1 - 262144$	FE
327680 to 393215	$D_1 - 327680$	FE
393216 to 458751	$D_1 - 393216$	FE
458752 to 524287	$D_1 - 458752$	FE
524288 to 589823	$D_1 - 524288$	FE
589824 to 655359	$D_1 - 589824$	FE
655360 to 720895	$D_1 - 655360$	FE
720896 to 786431	$D_1 - 720896$	FE
786432 to 851967	$D_1 - 786432$	FE
851968 to 917503	$D_1 - 851968$	FE
917504 to 983039	$D_1 - 917504$	FE
983040 to 999999	$D_1 - 983040$	FE

Table 6-3-4

4) Enter H_1 to address: E5 on page: C.
   Example: If $H_1 = \text{FE}$,
   select page: C, address: E5, and set data: FE, then press the PAUSE button.
5) From Table 6-3-5, obtain the maximum decimal number less than D_2, and it is assumed to be D_3.
   Example: If $D_2 = 12345$.
   $D_3 = 12288$
6) From Table 6-3-5, obtain a hexadecimal number that corresponds to D_3, and it is assumed to be H_3.
   Example: If $D_3 = 12288$,
   $H_3 = 3000$
7) Caluculate D_4 using following equations (decimal caluculation). $(0 \leqq D_4 \leqq 225)$
   $D_4 = D_2 - D_3$
   Example: If $D_2 = 12345$ and $D_3 = 12288$,
   $D_4 = 12345 - 12288 = 57$
8) Convert D_4 into a hexadecimal number to obtain H_4. (See Table 6-4-1 “Hexadecimal - decimal conversion table” in 6-4. Service Mode)
   Example: If $D_4 = 57$,
   $H_4 = 39$
9) Enter higher two digits of H_3 to address: E6 on page: C.
   Example: If $H_3 = 3000$,
   select page: C, address: E6, and set data: 30, then press the PAUSE button.
10) Enter H_4 to address: E7 on page: C.
    Example: If $H_4 = 39$,
    select page: C, address: E7, and set data: 39, then press the PAUSE button.
11) Select page: 0, address: 01, and set data: 00.

D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3
0	0000	8192	2000	16384	4000	24576	6000	32768	8000	40960	A000	49152	C000	57344	E000
256	0100	8448	2100	16640	4100	24832	6100	33024	8100	41216	A100	49408	C100	57600	E100
512	0200	8704	2200	16896	4200	25088	6200	33280	8200	41472	A200	49664	C200	57856	E200
768	0300	8960	2300	17152	4300	25344	6300	33536	8300	41728	A300	49920	C300	58112	E300
1024	0400	9216	2400	17408	4400	25600	6400	33792	8400	41984	A400	50176	C400	58368	E400
1280	0500	9472	2500	17664	4500	25856	6500	34048	8500	42240	A500	50432	C500	58624	E500
1536	0600	9728	2600	17920	4600	26112	6600	34304	8600	42496	A600	50688	C600	58880	E600
1792	0700	9984	2700	18176	4700	26368	6700	34560	8700	42752	A700	50944	C700	59136	E700
2048	0800	10240	2800	18432	4800	26624	6800	34816	8800	43008	A800	51200	C800	59392	E800
2304	0900	10496	2900	18688	4900	26880	6900	35072	8900	43264	A900	51456	C900	59648	E900
2560	0A00	10752	2A00	18944	4A00	27136	6A00	35328	8A00	43520	AA00	51712	CA00	59904	EA00
2816	0B00	11008	2B00	19200	4B00	27392	6B00	35584	8B00	43776	AB00	51968	CB00	60160	EB00
3072	0C00	11264	2C00	19456	4C00	27648	6C00	35840	8C00	44032	AC00	52224	CC00	60416	EC00
3328	0D00	11520	2D00	19712	4D00	27904	6D00	36096	8D00	44288	AD00	52480	CD00	60672	ED00
3584	0E00	11776	2E00	19968	4E00	28160	6E00	36352	8E00	44544	AE00	52736	CE00	60928	EE00
3840	0F00	12032	2F00	20224	4F00	28416	6F00	36608	8F00	44800	AF00	52992	CF00	61184	EF00
4096	1000	12288	3000	20480	5000	28672	7000	36864	9000	45056	B000	53248	D000	61440	F000
4352	1100	12544	3100	20736	5100	28928	7100	37120	9100	45312	B100	53504	D100	61696	F100
4608	1200	12800	3200	20992	5200	29184	7200	37376	9200	45568	B200	53760	D200	61952	F200
4864	1300	13056	3300	21248	5300	29440	7300	37632	9300	45824	B300	54016	D300	62208	F300
5120	1400	13312	3400	21504	5400	29696	7400	37888	9400	46080	B400	54272	D400	62464	F400
5376	1500	13568	3500	21760	5500	29952	7500	38144	9500	46336	B500	54528	D500	62720	F500
5632	1600	13824	3600	22016	5600	30208	7600	38400	9600	46592	B600	54784	D600	62976	F600
5888	1700	14080	3700	22272	5700	30464	7700	38656	9700	46848	B700	55040	D700	63232	F700
6144	1800	14336	3800	22528	5800	30720	7800	38912	9800	47104	B800	55296	D800	63488	F800
6400	1900	14592	3900	22784	5900	30976	7900	39168	9900	47360	B900	55552	D900	63744	F900
6656	1A00	14848	3A00	23040	5A00	31232	7A00	39424	9A00	47616	BA00	55808	DA00	64000	FA00
6912	1B00	15104	3B00	23296	5B00	31488	7B00	39680	9B00	47872	BB00	56064	DB00	64256	FB00
7168	1C00	15360	3C00	23552	5C00	31744	7C00	39936	9C00	48128	BC00	56320	DC00	64512	FC00
7424	1D00	15616	3D00	23808	5D00	32000	7D00	40192	9D00	48384	BD00	56576	DD00	64768	FD00
7680	1E00	15872	3E00	24064	5E00	32256	7E00	40448	9E00	48640	BE00	56832	DE00	65024	FE00
7936	1F00	16128	3F00	24320	5F00	32512	7F00	40704	9F00	48896	BF00	57088	DF00	65280	FF00

Note: D_3: Decimal
H_3: Hexadecimal

Table 6-3-5

COVER

3-3. SERVO AND RF SYSTEM ADJUSTMENTS

Before perform the servo and RF system adjustments, check that the specified values of “27MHz Origin Oscillation Adjustment” of “VIDEO SYSTEM ADJUSTMENTS” is satisfied.
Check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Adjusting Procedure:

1. REEL FG adjustment
2. CAP FG duty adjustment
3. Switching position adjustment
4. SD error rate check

1. REEL FG Adjustment (VC-305 board) RadarW

Compensates the dispersion of the hall elements.

Mode	VTR stop
Signal	No signal
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	17, 2F
Specified value	The data of page: 3, address: 03 is “00” or “01” or “04” or “05”

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2	0	01	01	
3	3	01	1C	Press PAUSE button.
4	3	02		Check the data changes to “00”.
5	3	03		Check the data is “00” or “01” or “04” or “05”. (Note 2)
6	0	01	00	

Note 2: If the data is other value, adjustment has errors.
For the error contents, see the following table.

Data	Error contents
02, 03, 06, 07	T REEL is defective
08, 09, 0C, 0D	S REEL is defective
0A, 0B, 0E, 0F,	T REEL and S REEL are defective

2. CAP FG Duty Adjustment (VC-305 board) RadarW

Set the CAP FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur in the LP mode.

Mode	VTR stop
Signal	No signal
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	16
Specified value	The data of page: 3, address: 03 is “00”

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2	0	01	01	
3	3	01	1B	Press PAUSE button.
4	3	02		Check the data changes to “00”.
5	3	03		Check the data is “00”. (Note 2)
6	0	01	00	

Note 2: If the data is “01”, adjustment has errors or the mechanism deck is defective.

3. Switching Position Adjustment (VC-305 board)

RadarW

To obtain normal playback waveform output, adjust the switching position.

Mode	VTR playback
Signal	SW/OL standard (WR5-2D)
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	10, 11, 12, 13
Specified value	The data of page: 3, address: 03 is “00”

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert the SW/OL standard tape and enter the VTR stop mode.
2	0	01	01	
3	C	10	EE	Press PAUSE button.
4	3	21		Check the data is “02”. (Note 2)
5	3	01	0D	Press PAUSE button.
6	3	02		Check the data changes to “00”.
7	3	03		Check the data is “00”. (Note 3, 4)
8	0	01	00	

Note 2: If the data is “72”, the tape top being played. After playing the tape for 1 to 2 seconds, stop it, perform step 5 and higher. If the data is “62”, the tape end being played. After rewind the tape, perform step 5 and higher.

Note 3: If the data is not “00”, select page: C, address: 21 and take a note of the data. Set data: 10, press the PAUSE button, then perform the adjustment again.
When the data does not become “00” even if the adjustment has been performed again, set back the data on page: C, address: 21.

Note 4: If bit0 of the data is “1”, the EVEN channel is defective. If bit1 of the data is “1”, the ODD channel is defective. Contents of the defect is see written into page: C, address: 10 and 12. See following table.
(For the bit values, refer to “6-4. SERVICE MODE”, “4-3. 3. Bit Value Discrimination”.)
If bit3 of the data is “1”, the tape end being played. After rewinding the tape, perform the adjustment again.

When the EVEN channel is defective

Data of page: C, address: 10	Contents of defect
EE	Writing into EEP ROM (IC4502) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC6001

When the ODD channel is defective

Data of page: C, address: 12	Contents of defect
E8	Adjustment data is out of range
E7	No data is returned from IC6001

4. SD Error Rate Check (LP) (VC-305 board) RadarW

Checking the video error rate in LP mode, adjust the filter tap coefficient of IC3301.

Mode	VTR playback
Signal	Recorded signal at “Preparations before adjustments”
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	1C (Note 1)
Adjustment Address	B3 to C8
Specified value	The data of page: 3, address: 03 is “00”

Note 1: If reading/writing data on page 1C, set data: 01 to page: 0, address: 10, and then select page C. By this data setting, the page C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Switch setting:

1) REC MODE (Menu display) .... LP

Preparations before adjustment:

1) Set the camcoder to CAMERA mode (LP mode).
2) Record camera signal for a minute, and rewind tape.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2				Playback the recorded signal at “Preparations before adjustments”.
3	3	01	40	Press PAUSE button.
4	3	02		Check the data changes to “00”.
5	3	03		Check the data is “00”. (Note 2)
6	0	01	00	

Note 2: If the data is other value, adjustment has errors.
For the error contents, see the following table.

Data	Error contents
01	Error rate of the EVEN channel exceeds the specified value
02	Error rate of the ODD channel exceeds the specified value
03	Error rate of the EVEN and ODD channels exceeds the specified value

3-4. VIDEO SYSTEM ADJUSTMENTS

Before perform the video system adjustments, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set data “00”
Video system adjustments must be performed in the following order.

Adjusting Procedure:

1. 27 MHz origin oscillation adjustment
2. S VIDEO OUT Y level adjustment
3. S VIDEO OUT chroma level adjustment
4. VIDEO OUT level check

1. 27 MHz Origin Oscillation Adjustment (VC-305 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	CAREMA
Subject	Arbitrary
Measurement Point	Pin ⑫ of IC1501
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	10
Specified value	f = 13500000 ± 68 Hz

Note: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	45		Change the data and set the frequency (f) to the specified value.
3	F	45		Press PAUSE button.
4	0	01	00	

VC-305 BOARD

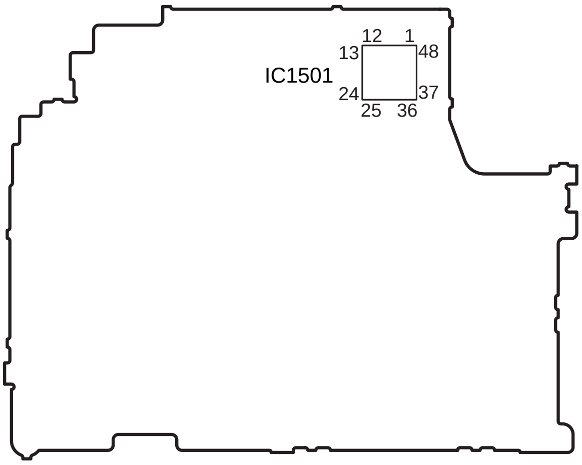


Fig. 6-3-5

2. S VIDEO OUT Y Level Adjustment (VC-305 board)

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Y signal terminal of S VIDEO jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	25
Specified value	A = 1000 ± 20 mVp-p

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	8	A0		Set the bit value of bit3 is “1”, and press PAUSE button. (Note 2)
3	3	0C	02	Press PAUSE button.
4	C	25		Change the data and set the Y signal level (A) to the specified value.
5	C	25		Press PAUSE button.
6	8	A0		Set the bit value of bit3 is “0”, and press PAUSE button. (Note 2)
7	3	0C	00	Press PAUSE button.
8	0	01	00	

Note 2: For the bit values, refer to “6-4. SERVICE MODE”, “4-3. 3. Bit Value Discrimination”.

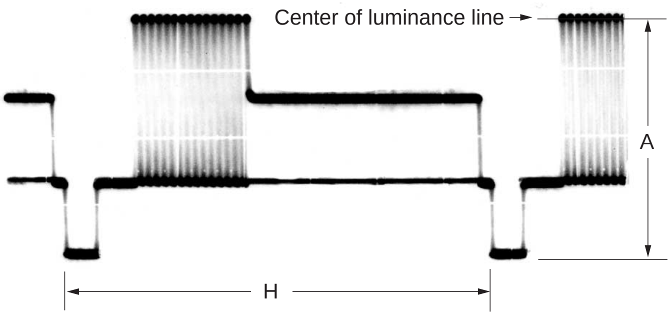


Fig. 6-3-6

3. S VIDEO OUT C Level Adjustment (VC-305 board)

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Chroma signal terminal of S VIDEO jack (75 Ω terminated) External trigger: Y signal terminal of S VIDEO jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	26, 27
Specified value	Cr level: A = 714 ± 14 mVp-p Cb level: B = 714 ± 14 mVp-p Burst level: C = 286 ± 6 mVp-p

Note 1: Check that the data of page: 0, address: 10 is “00”.

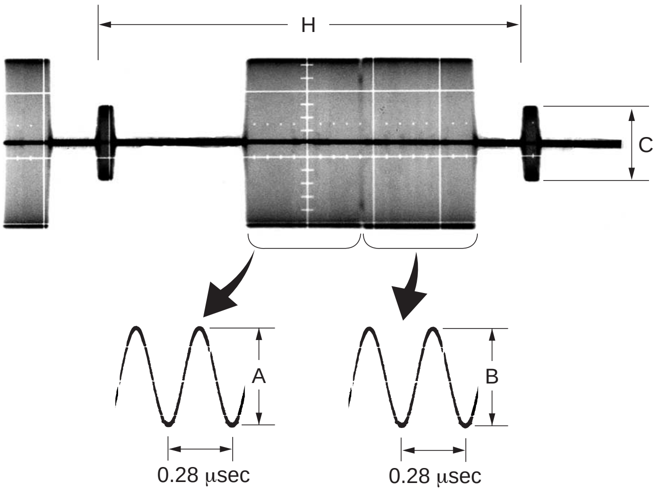


Fig. 6-3-7

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	8	A0		Set the bit value of bit3 is “1”, and press PAUSE button. (Note 2)
3	3	0C	02	Press PAUSE button.
4	C	26		Change the data and set the Cr signal level (A) to the specified value.
5	C	26		Press PAUSE button.
6	C	27		Change the data and set the Cb signal level (B) to the specified value.
7	C	27		Press PAUSE button.
8				Check the burst signal (C) to the specified value.
9	8	A0		Set the bit value of bit3 is “0”, and press PAUSE button. (Note 2)
10	3	0C	00	Press PAUSE button.
11	0	01	00	

Note 2: For the bit values, refer to “6-4. SERVICE MODE”, “4-3. 3. Bit value Discrimination”.

4. VIDEO OUT Level Check (VC-305 board)

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Video terminal of A/V jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified value	Sync level: A = 286 ± 18 mVp-p Burst level: B = 286 ± 18 mVp-p

Checking method:

Order	Page	Address	Data	Procedure
1				Check that the SYNC level (A) satisfies the specified value.
2				Check that the burst level (B) satisfies the specified value.

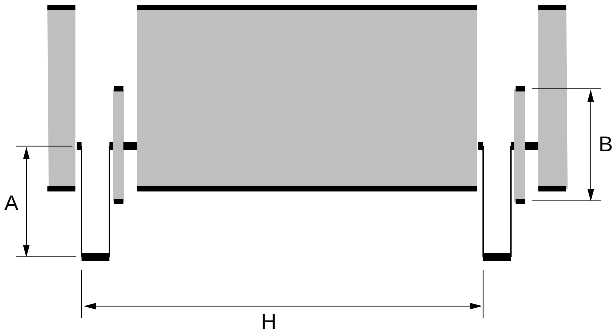


Fig. 6-3-8

3-5. AUDIO SYSTEM ADJUSTMENTS

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 6-3-9.

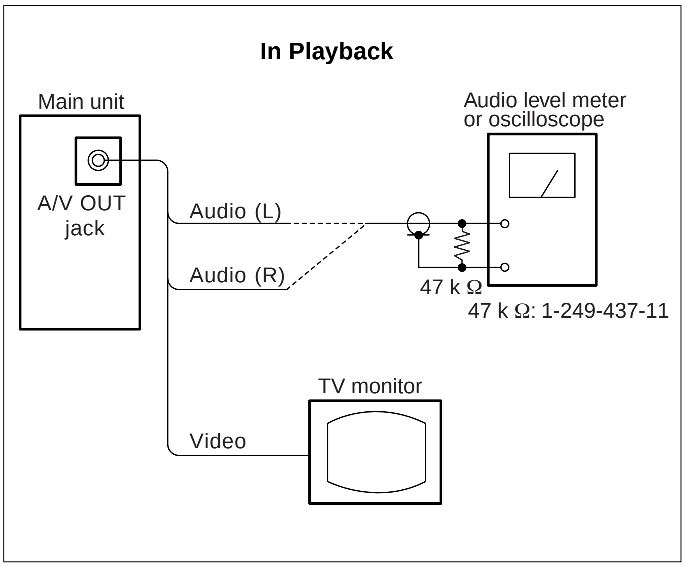

In Playback
Main unit
A/V OUT jack
Audio level meter or oscilloscope
Audio (L)
Audio (R)
47 k Ω
47 k Ω: 1-249-437-11
TV monitor
Video

Fig. 6-3-9

1. Playback Level Check

Mode	VTR playback
Signal	Digital8 alignment tape: For audio operation check (WR5-3ND)
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio level meter or oscilloscope
Specified Value	32 kHz mode: 1 kHz, + 3 dBs ± 2 dB (2.46 Vp-p to 3.89 Vp-p)
	48 kHz mode: 1 kHz, + 3 dBs ± 2 dB (2.46 Vp-p to 3.89 Vp-p)
	44.1 kHz mode (EMP OFF) : 7.35 kHz, + 2 dBs ± 2 dB (2.19 Vp-p to 3.47 Vp-p)
	44.1 kHz mode (EMP ON) : 7.35 kHz, – 3.8 dBs to – 1.2dBs (1.4 Vp-p to 1.9 Vp-p)

Checking Method:

1) Check that the playback signal level is the specified value.

COVER

6-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER

The adjustment remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander

1) Connect the adjustment remote commander to CN1011 of VC-305 board via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A).
   The "Jig Modification" is necessary for connecting the adjustment remote commander to this set.
   Modify the jig by referring to page 6-5.
   To operate the adjustment remote commander, connect the AC power adapter (8.4 Vdc) to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.
2) Set the HOLD switch of the adjustment remote commander to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander will display as shown in Fig. 6-4-1.

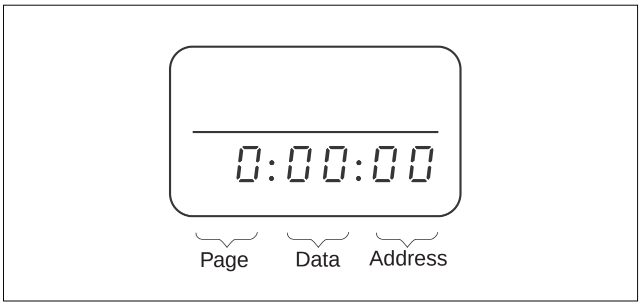


Fig. 6-4-1

3) Operate the adjustment remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table

Lower digit of hexadecimal / Upper digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: The characters shown in the parenthesis ( ) shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table 6-4-1

4-3. SERVICE MODE

Additional note on adjustment

Note: After the completion of the all adjustments, cancel the service mode by either of the following ways.

1) After data on page: D is restored, press the RESET button to reset the unit. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting)
2) After data on page: D is restored, select page: 0, address: 01, and return the data to 00. And when data on page: 2 and 3 are changed, return data to the original condition.

1. Setting the Test Mode

Page D	Address 10

Data	Function
00	Normal
01	Forced camera power ON
02	Forced VTR power ON

- Before setting the data , select page: 0, address: 01, and set data: 01.
- For page D, the data set will be recorded in the non-volatile memory by pressing the PAUSE button of the adjustment remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off (8.4 Vdc).
- After completing adjustments/repairs, be sure to return the data of this address to 00, and press the PAUSE button of the adjustment remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergence Memory Address

2-1. C Page Emergence Memory Address

Page C	Address F4 to FF

Address	Contents
F4	EMG code when first error occurs
F6	Upper: MSW code when shift starts when first error occurs Lower: MSW code when first error occurs
F7	Lower: MSW code to be moved when first error occurs
F8	EMG code when second error occurs
FA	Upper: MSW code when shift starts when second error occurs Lower: MSW code when second error occurs
FB	Lower: MSW code to be moved when second error occurs
FC	EMG code when last error occurs
FE	Upper: MSW code when shift starts when last error occurs Lower: MSW code when last error occurs
FF	Lower: MSW code to be moved when last error occurs

When no error occurs in this unit, data “00” is written in the above addresses (F4 to FF). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (F4 to F7). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (F8 to FB).
Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (FC to FF).

Note: After completing adjustments, be sure to initialize the data of addresses F4 to FF to “00”.

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	01	37	Press PAUSE button.
3	3	02		Check the data changes to “00”.
4	0	01	00	

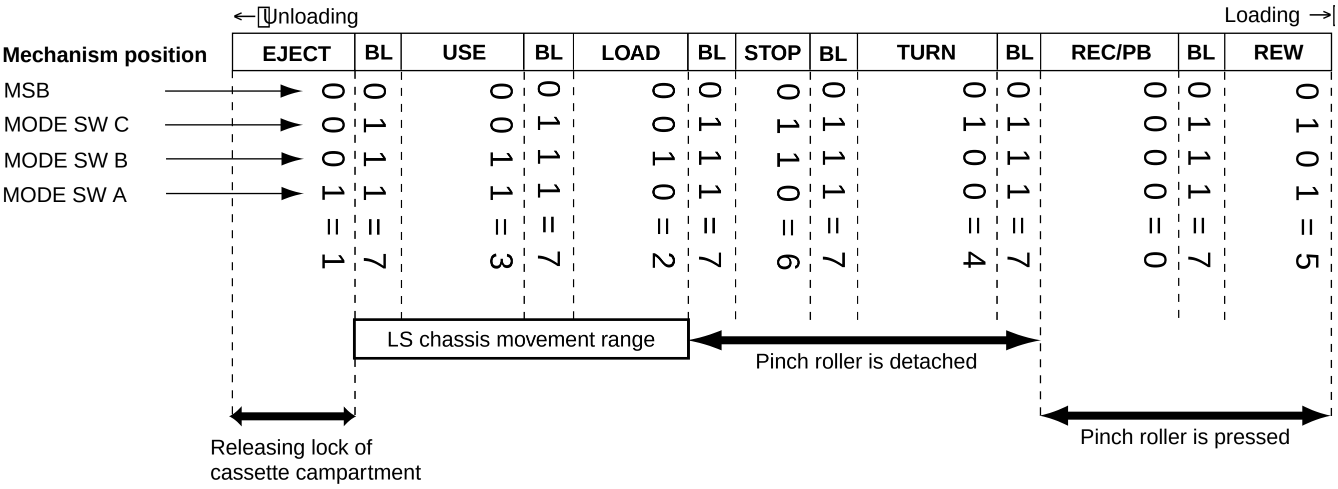
2-2. EMG Code (Emergency Code)

Codes corresponding to the errors which occur are written in C page, addresses F4, F8 and FC. The type of error indicated by the code are shown in the following table.

Code	Emergency Type
00	No error
10	Loading motor emergency during loading
11	Loading motor emergency during unloading
22	T reel emergency during normal rotation
23	S reel emergency during normal rotation
24	T reel emergency (Short circuit between S reel terminal and T reel terminal)
30	FG emergency at the start up of the capstan
40	FG emergency at the start up of the drum
42	FG emergency during normal rotation of the drum

2-3. MSW Codes

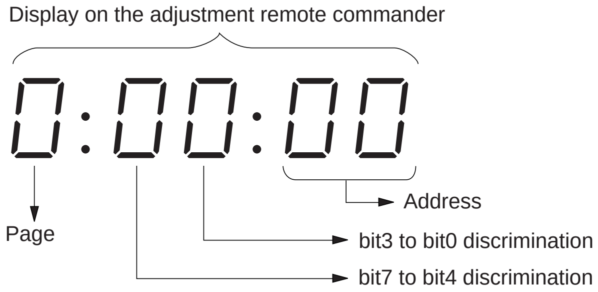
- The lower parts of the data of addresses F6, FA and FE represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses F6, FA and FE represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses F7, FB and FF represent the MSW codes of the desired movement when the mechanism position is to be moved.


←Unloading
Loading →|
Mechanism position
EJECT
BL
USE
BL
LOAD
BL
STOP
BL
TURN
BL
REC/PB
BL
REW
MSB
MODE SW C
MODE SW B
MODE SW A
0 0 0 1 = 1
0 1 1 1 = 7
0 0 1 1 = 3
0 1 1 1 = 7
0 0 1 0 = 2
0 1 1 1 = 7
0 1 1 0 = 6
0 1 1 1 = 7
0 1 0 0 = 4
0 1 1 1 = 7
0 0 0 0 = 0
0 1 1 1 = 7
0 1 0 1 = 5
LS chassis movement range
Pinch roller is detached
Releasing lock of cassette campartment
Pinch roller is pressed

Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
REC/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Us the table below to discriminate if the bit value is “1” or “0”.


Display on the adjustment remote commander
0:00:00
Address
Page
bit3 to bit0 discrimination
bit7 to bit4 discrimination

(Example) If the remote commander display is “8E”, bit value from bit 7 to bit 4 can be discriminated from the column Ⓐ, and those from bit 3 to bit 0 from column Ⓑ.

	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (C)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

4. Switch Check (1)

Page 7	Address 0E

Bit	Function	When bit value = 1	When bit value = 0
0	POWER SW (VTR MODE SW) (SS-3000 block S001)	OFF	ON (VCR)
1	POWER SW (CAM MODE SW) (SS-3000 block S001)	OFF	ON (CAMERA)
2	BATT INFO SW (FK-3000 block S002)	OFF	ON
3	EJECT SW (SS-3000 block S003)	OFF	ON
4	CC DOWN SW (Mechanism chassis)	OFF (UP)	ON (DOWN)
5	PHOTO SW (POTO FREEZE SW) (SS-3000 block S004)	OFF	ON
6			
7			

Using method:

1) Select page: 7, address: 0E.
2) By discriminating the bit value of display data, the state of the switches can be discriminated.

5. Switch Check (2)

Page 7	Address 0C

Bit	Function	When bit value = 1	When bit value = 0
2	A/V OUT jack (FP-577 flexible)	Used	Not used
3	S VIDEO jack (FP-577 flexible)	Used	Not used

Using method:

1) Select page: 7, address: 0C.
2) By discriminating the bit value of display data, the state of the switch can be discriminated.

6. Switch Check (3)

Page 2	Address 60 to 63, 65, 67

Using method:
1) Select page: 2, address: 60 to 63, 65 and 67.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 24	25 to 3F	40 to 5D	5E to 81	82 to AA	AB to D7	D8 to FF
60 (KEY AD0) (IC5001 (59))		LIGHT (FK-3000 block) (S004)	STOP (FK-3000 block) (S005)	FF (FK-3000 block) (S006)	REW (FK-3000 block) (S007)	PLAY (FK-3000 block) (S008)	REC (FK-3000 block) (S009, S010)	No key input
61 (KEY AD1) (IC5001 (60))	FOCUS (CF-3000 block) (S007)	BACKLIGHT (CF-3000 block) (S009)	FADER (CF-3000 block) (S014)					No key input
62 (KEY AD2) (IC5001 (61))	PAUSE (FK-3000 block) (S003)	END SEARCH (CF-3000 block) (S008)	MENU EXECUTE (CF-3000 block) (S023)	VOLUME + (CF-3000 block) (S019)	VOLUME – (CF-3000 block) (S021)			No key input
63 (KEY AD3) (IC5001 (65))		EXPOSURE (CF-3000 block) (S005)	TITLE (CF-3000 block) (S010)	MENU (CF-3000 block) (S012)	DISPLAY (CF-3000 block) (S015)	PANEL CLOSE (CF-3000 block) (S001)		PANEL OPEN (CF-3000 block) (S001)
65 (KEY AD5) (IC5001 (67))	PHOTO (PHOTO START) (SS-3000 block) (S004)				PANEL REVERSE (PR-3000 block) (S601)			PANEL NORMAL (PR-3000 block) (S601)
67 (KEY AD7) (IC5001 (69))	START/STOP (SS-3000 block) (S002)							No key input

7. LED, Video Light, IR Light Check

Page 7	Address 07	Bit5

Using method:
1) Set the unit to camera mode.
2) Select page: 7, address: 07, and set the bit value of bit5 to “1”.
3) Check that all LED are lit, that the IR light is lit, and that the video light is lit.
4) Select page: 7, address: 07, and set the bit value of bit5 to “0”.

8. Record of Use Check

Page 7	Address A7 to A9, C8 to CF

Address	Function		Remarks
A7	Drum rotation counted time (BCD code)	Hour	100000th place digit and 10000th place digit of counted time (decimal digit)
A8		Hour	1000th place digit and 100th place digit of counted time (decimal digit)
A9		Hour	10th place digit and 1st place digit of counted time (decimal digit)
C8	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
C9		Month	
CA		Day	
CB	Final condensation occurrence date (BCD code)	Year	
CC		Month	
CD		Day	
CE	Video light counted time (Note 4)	Hour (H)	1000th place digit and 100th place digit of counted time (hexadecimal digit)
CF		Hour (L)	10th place digit and 1st place digit of counted time (hexadecimal digit)

Using method:

1) The record of use data is displayed at page: 7, addresses: A7 to A9 and C8 to CF.

Note 1: This data will be erased (reset) when the cabinet (R) assembly (VC-305 board CN1007 (18P)) is removed.

Note 2: When the drum was replaced, initialize the drum rotation counted time.

Note 3: When replacing the video light, initialize the data of address: CE and CF.

Note 4: Video light counted time is indicated in hexadecimal notation. Convert hexadecimal numbers to decimals before useing them.

Initializing method of drum rotation counted time:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 7, address: A7, set data: 00, and press the PAUSE button.
3) Select address: A8 and A9 and set data “00” into them in the same way as in address: A7.
4) Select page: 0, address: 01, and set data: 00.

9. Record of Self-diagnosis Check

Page 7	Address B0 to C6

Address	Self-diagnosis code
B0	“Repaired by” code (Occurred 1st time) *1
B1	“Block function” code (Occurred 1st time)
B2	“Detailed” code (Occurred 1st time)
B4	“Repaired by” code (Occurred 2nd time) *1
B5	“Block function” code (Occurred 2nd time)
B6	“Detailed” code (Occurred 2nd time)
B8	“Repaired by” code (Occurred 3rd time) *1
B9	“Block function” code (Occurred 3rd time)
BA	“Detailed” code (Occurred 3rd time)
BC	“Repaired by” code (Occurred 4th time) *1
BD	“Block function” code (Occurred 4th time)
BE	“Detailed” code (Occurred 4th time)
C0	“Repaired by” code (Occurred 5th time) *1
C1	“Block function” code (Occurred 5th time)
C2	“Detailed” code (Occurred 5th time)
C4	“Repaired by” code (Occurred the last time) *1
C5	“Block function” code (Occurred the last time)
C6	“Detailed” code (Occurred the last time)

*1 : “01” → “C”, “03” → “E”

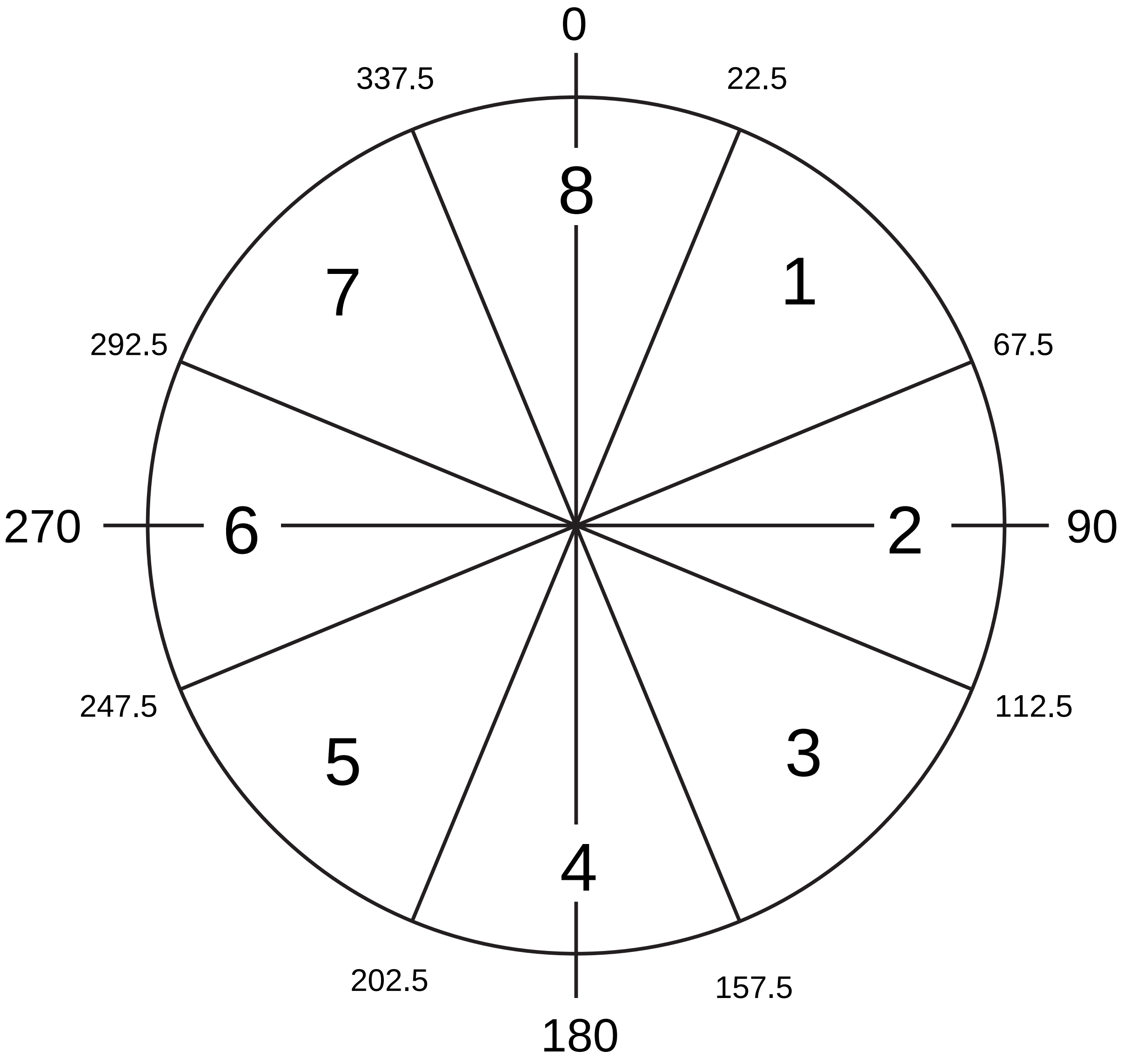
Using method:

1) The past self-diagnosis codes are displayed at page: 7, address: B0 to C6. Refer to “SELF-DIAGNOSIS FUNCTION” for detail of the self-diagnosis code.

   Note: This data will be erased (reset) when the cabinet (R) assembly (VC-305 board CN1007 (18P)) is removed.

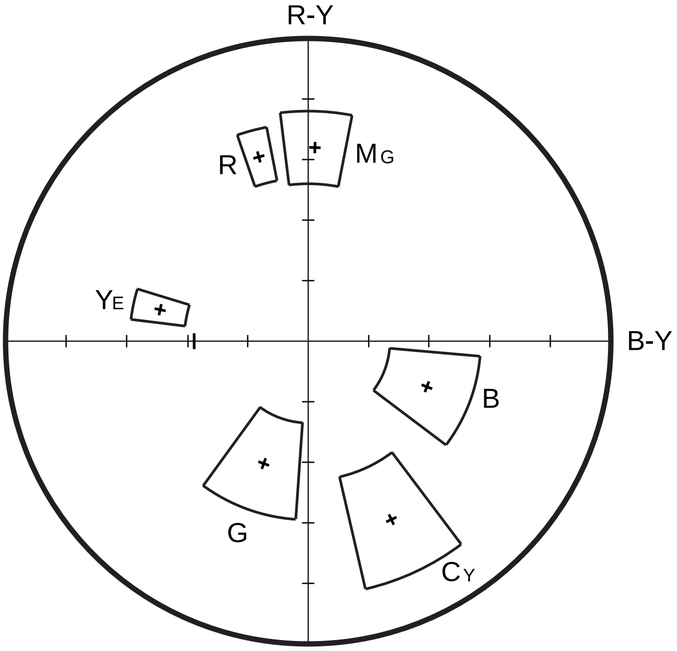
FOR CAMERA OPTICAL AXIS ADJUSTMENT

Take a copy of OPTICAL AXIS FRAME with a clear sheet for use.


0
337.5
22.5
8
7
1
292.5
67.5
270
6
2
90
247.5
112.5
5
3
4
202.5
157.5
180

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.



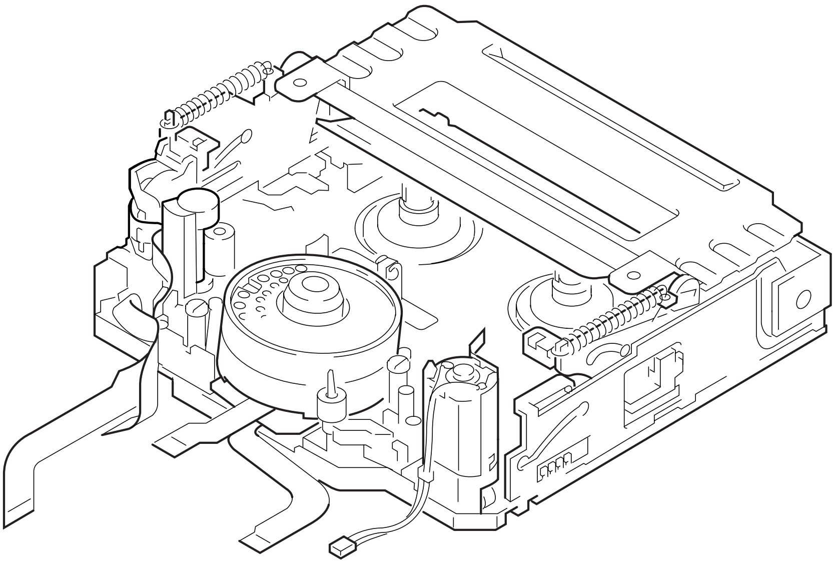
DCR-TRV250

8mm Video MECHANICAL ADJUSTMENT MANUAL IX

Ver 1.0 2000. 12

M2000 MECHANISM

Please use this manual with the service manual of the respective models.



Digital 8 MECHANISM DECK

SONY®

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1. Preparations for Check, Adjustment and Replacement of Mechanism Block

Before Replacement, Check or Adjustment

- Refer to the “DISASSEMBLY” section of the SERVICE MANUAL of the respective models for details of removing cabinets and printed wiring boards.
- When checking a mechanism ir making any adjustment to the mechanism or replacing mechanical parts, be sure to use the Mode Selector II and select the appropriate status of the mechanical deck such that the mechanical status is suitable for the desired work. Refer to section “1-2. Mode Selector II Operating Procedure” for details on how to enter the mode shown in a rectangle ☐ mode in the sequent sections of this manual.

* Assemble and adjust the parts in the USE mode if any mode is not specified in this manual.

1-1. Service Jigs and Tools

Ref. No.	Name		Part code	Jig inscription	Used for
J-1	Cleaning fluid		Y-2031-001-0		
J-2	Wiping cloth		7-741-900-53		
J-3	Super-fine applicator (made by Nippon Applicator (P752D))				
J-4	Head eraser		commercially available		Tape path
J-5	Mirror (small oval type)		J-6080-840-A	GD-2038	Tape path
J-6	Alignment tape	NTSC : WR5-1NP	8-967-995-02		For tracking adjustment
		PAL : WR5-1CP	8-967-995-07		
J-7	FWD/RVS take-up torque cassette		J-6080-824-A	GD-2086	
J-8	Tape path screwdriver		J-6082-026-A		For tape guide adjustment
J-9	Adjustment remote commander (RM-95 upgrated)		J-6082-053-B		Tape path (for setting the path mode)(Note)
J-10	MD process table		J-6082-166-A		
J-11	Floil grease		7-662-001-39		
J-12	Torque screwdriver		J-9049-330-A		
J-13	Mode Selector II		J-6082-282-B		
J-14	Mode Selector II conversion board		J-6082-516-A		
J-15	Mode Selector II ROM, Ver 1.6		J-6082-314-E		
J-16	Thickness gauge		9-911-053-00		For capstan azimuth adjustment, LS cam plate position adjustment

Other required equipment:

- Oscilloscope
- Analog tester (20 kΩ)

Note: If the micro processor IC in the adjustment remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

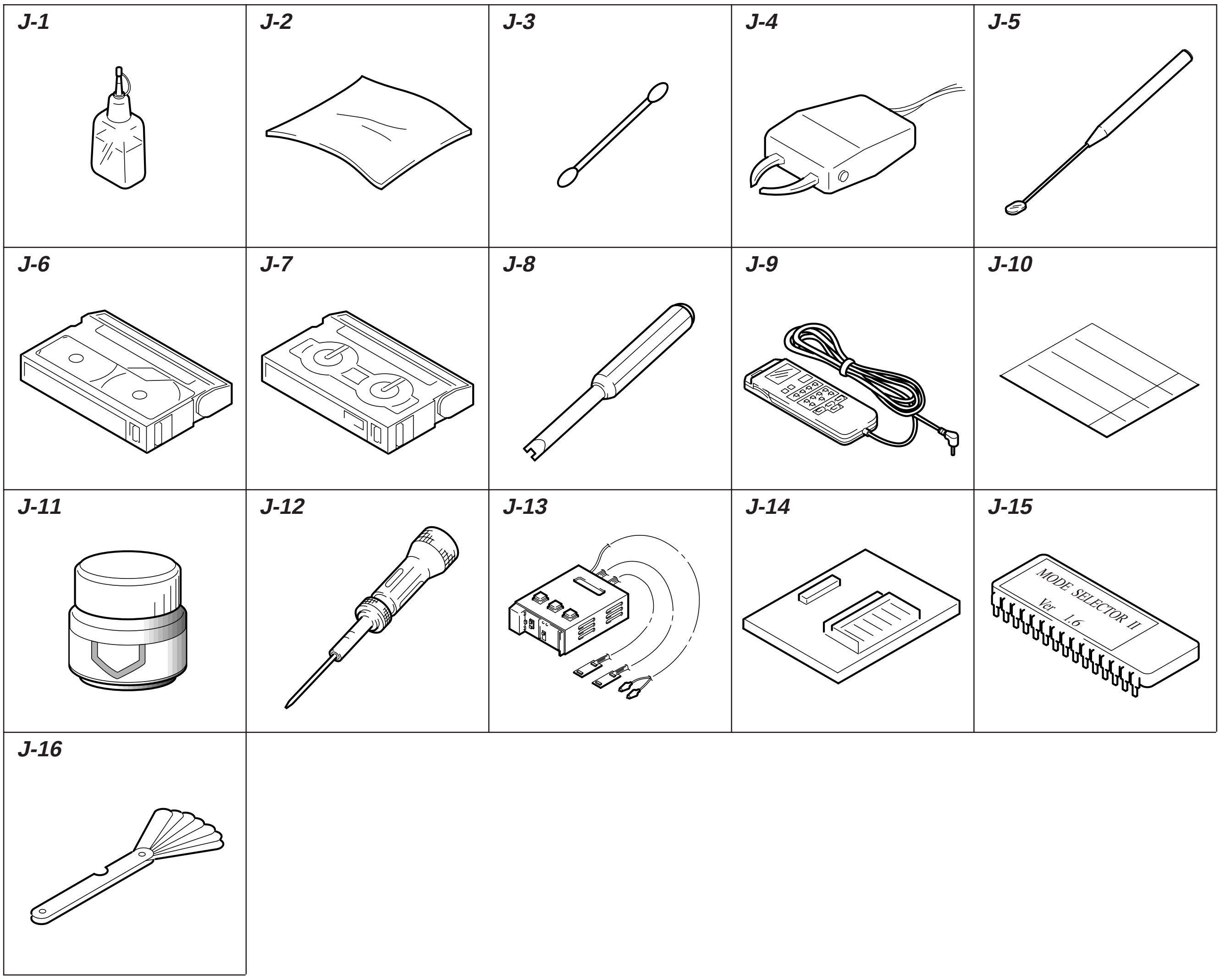

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12
J-13
J-14
J-15
MODE SELECTOR II
Ver 1.6
J-16

Fig. 1-1.

1-2. Mode Selector II Operating Procedure

1-2-1. Introduction

The Mode Selector II is a mechanism drive tool that assists maintenance work of the various mechanism decks. It has the following functions.

1. Manual Test

In this mode, the motor of the mechanism deck is powered only during the period while the switch is turned on manually. Using the Manual Test, the operator can freely control the motor of the mechanism deck.

2. Step Test

In this mode, the motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information. The Step Test is used to confirm a series of movements of the mechanism deck.

3. Auto Test

The Mode Selector II stores the status transition table in its memory as data indicating the respective modes of the mechanism deck. The status transition table can be used to confirm whether a mechanism deck is operating normally or has abnormality from a series of movements of a mechanism deck. If an abnormal status transition is detected during operation, the “NG” indication appears and the mechanism stops moving.

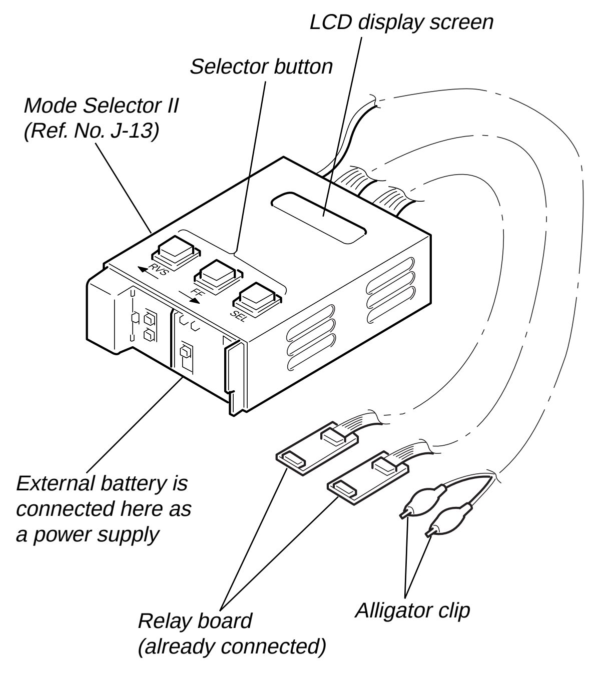

LCD display screen
Selector button
Mode Selector II
(Ref. No. J-13)
External battery is
connected here as
a power supply
Relay board
(already connected)
Alligator clip

Fig. 1-2.

Mode Selector II (J-6082-282-B) connection diagram

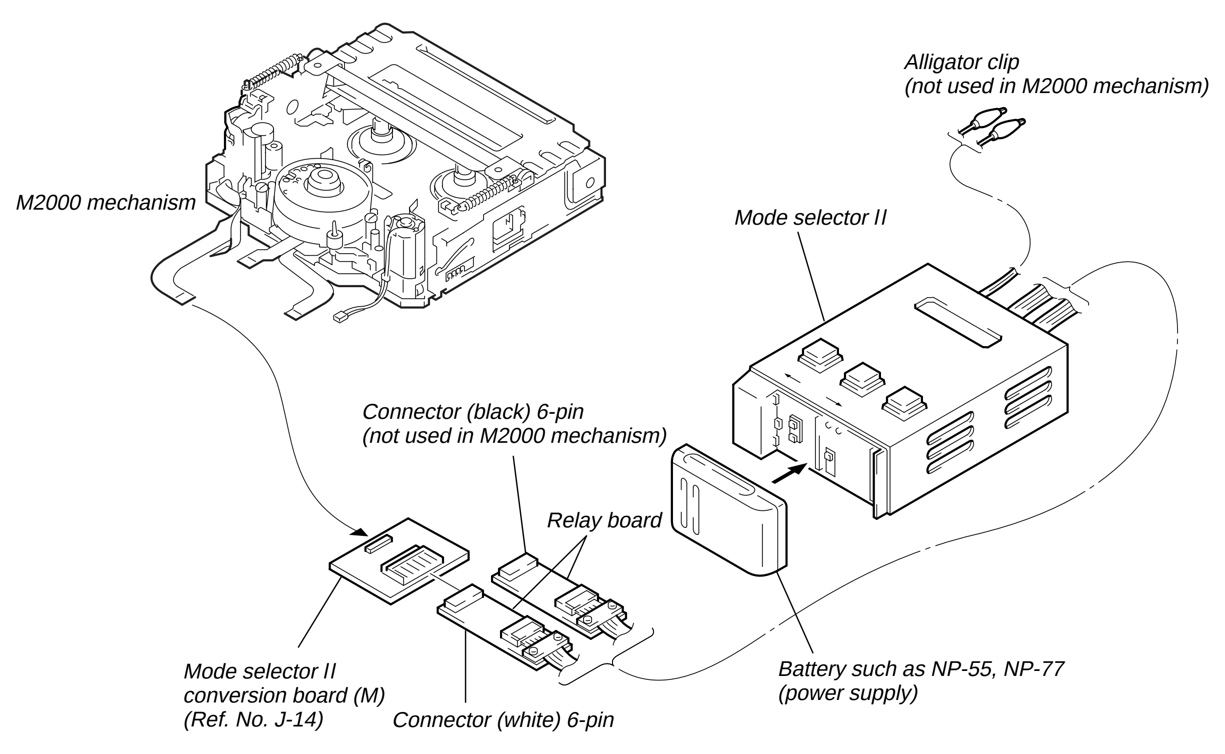
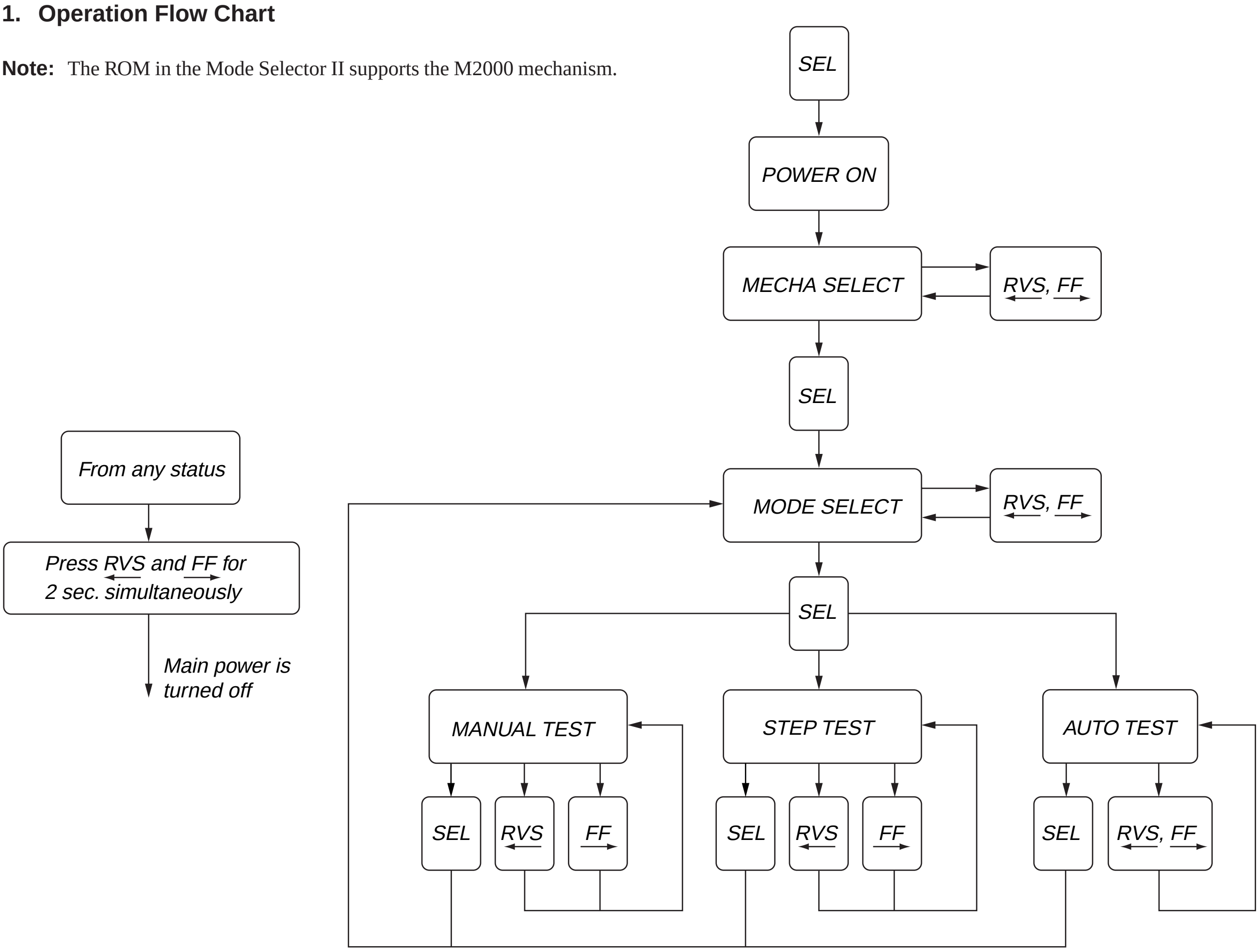

Alligator clip
(not used in M2000 mechanism)
M2000 mechanism
Mode selector II
Connector (black) 6-pin
(not used in M2000 mechanism)
Relay board
Mode selector II
conversion board (M)
(Ref. No. J-14)
Connector (white) 6-pin
Battery such as NP-55, NP-77
(power supply)

Fig. 1-3.

1-2-2. Operation

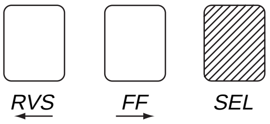
1. Operation Flow Chart

Note: The ROM in the Mode Selector II supports the M2000 mechanism.


SEL
POWER ON
MECHA SELECT
RVS, FF
SEL
MODE SELECT
RVS, FF
SEL
From any status
Press RVS and FF for 2 sec. simultaneously
Main power is turned off
MANUAL TEST
STEP TEST
AUTO TEST
SEL
RVS
FF
SEL
RVS
FF
SEL
RVS, FF

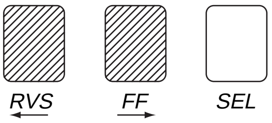
2. Mode Selector II Power On

Turn on the main power of the Mode Selector II as follows.
Press the SEL button.



3. Mode Selector II Power Off

Turn off the main power of the Mode Selector II as follows.
Press the RVS and FF buttons at the same time for 2 seconds or longer while the power is on.



4. Mecha Select

When the main power is turned on, the MECHA SELECT display appears on the LCD screen. Select the desired mechanism name using the RVS and FF buttons. Selection is complete when the SEL button is pressed. (Fig. A shows the B mechanism.)

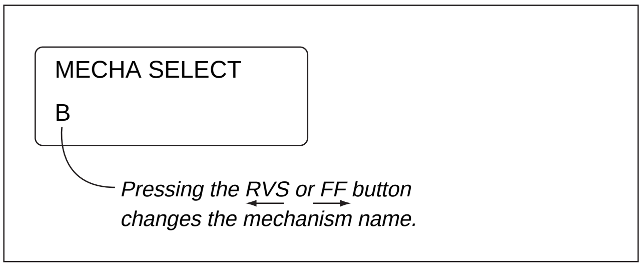

MECHA SELECT
B
Pressing the RVS or FF button changes the mechanism name.

Fig. a

5. Test Type Select

Using the RVS and FF buttons, select a desired test type from the three types of “MANUAL”, “STEP” and “AUTO”. Selection is complete when the SEL button is pressed.

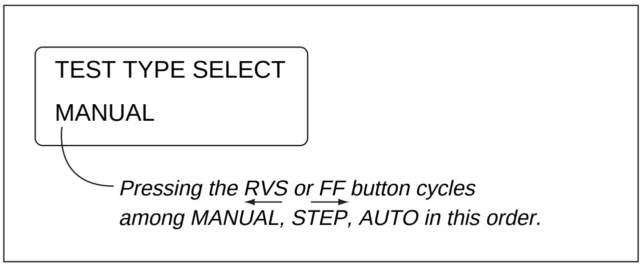

TEST TYPE SELECT
MANUAL
Pressing the RVS or FF button cycles among MANUAL, STEP, AUTO in this order.

Fig. b

6. Manual Test

In this test, the motor of the mechanism deck is turned on only during the period while the RVS or FF button is pressed manually.

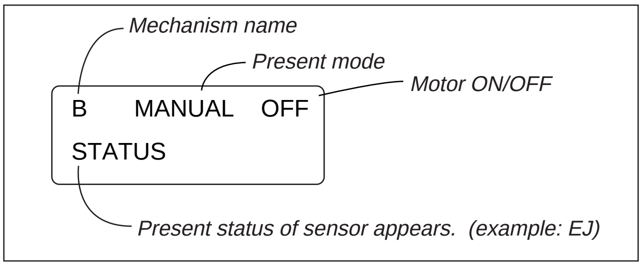

Mechanism name
Present mode
Motor ON/OFF
B
MANUAL
OFF
STATUS
Present status of sensor appears. (example: EJ)

Fig. c

7. Step Test

In this test, the direction of motor movement is determined by the RVS and FF buttons. The motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information.

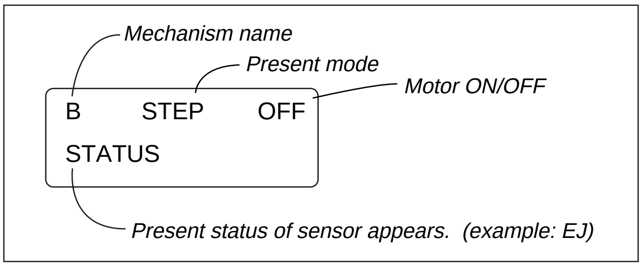

Mechanism name
Present mode
Motor ON/OFF
B
STEP
OFF
STATUS
Present status of sensor appears. (example: EJ)

Fig. d

8. Auto Test

In this test, the mechanism deck is tested as to whether it performs a series of movements correctly in accordance with the operation sequence that is memorized earlier for each type of deck, by checking the output signals from sensors with the stored memory. Turning on the RVS or FF button performs the same operation.

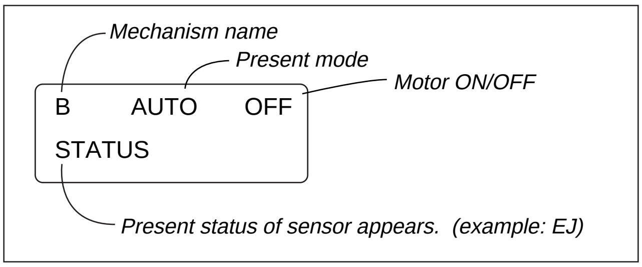

Mechanism name
Present mode
Motor ON/OFF
B
AUTO
OFF
STATUS
Present status of sensor appears. (example: EJ)

Fig. e

1-2-3. Mechanism Status (Position) Transition Table Using Mode Selector II

After selecting a mechanism deck, select either the MANUAL or STEP test (not AUTO) using the Mode Selector II. The desired mechanism status (position) can be specified by pressing the $\underleftarrow{\text{RVS}}$ or $\overrightarrow{\text{FF}}$ button. (The selected status appears on STATUS.)

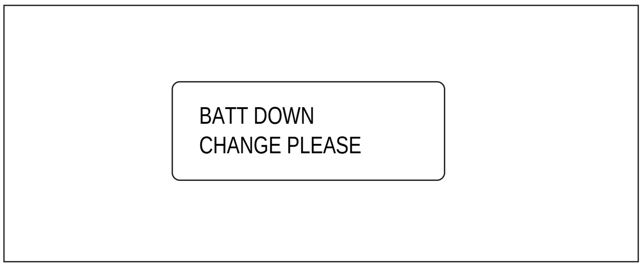
EJ↔USE↔LOAD↔STOP↔TURN↔RP↔REW

Code \ MD name				M2000 Mechanism
A	B	C		
1	0	0	1	EJ
1	1	0	2	USE
0	1	0	3	LOAD
0	1	1	4	STOP
0	0	1	5	TURN
0	0	0	6	RP
1	0	1	7	REW

[0 is common and short.
1 is common and open.]

1-2-4. Battery Alarm Indication

When the level of the battery used to supply power to this system decreases, this display appears asynchronously. When this happens, all operations are disabled and the battery must be replaced.



BATT DOWN
CHANGE PLEASE

Fig. f

2. Periodic Inspection and Maintenance

- Be sure to perform the following maintenance and inspection so that the machine delivers its full performance and functions, and to protect the machine and tape. Also, perform the following maintenance items after completing the repair work, regardless of the number of hours the machine has been operated by the user.

2-1. Rotary Drum Cleaning

1) Press a wiping cloth (Ref. No. J-2) moistened with cleaning fluid (Ref. No. J-1) lightly against the rotary drum. Rotate the upper drum with a super-fine applicator slowly in the counter-clockwise direction to clean the rotary drum.

Caution: Never rotate the rotary drum by turning on the main power of the motor or rotate it in the clockwise direction. Never move the cloth vertically against the head tip, as this will surely damage the video head; the video head must not be cleaned by any other different methods.

2-2. Tape Path System Cleaning

(Refer to Fig. 2-1.)

1) Set the EJECT state. Clean the tape running path (TG1, 2, 3, 4, 5, 6 and 7, pinch roller and capstan shaft) and lower drum with a super-fine applicator (Ref. No. J-3) moistened with cleaning fluid.

Note 1: Be careful not to allow oil or grease of the various link mechanisms to get on the super-fine applicator (Ref. No. J-3).

Note 2: Once the super-fine applicator has been moistened with alcohol, do not use it to clean other mechanical parts such as the tape guide. However, the pinch roller is cleaned with alcohol.

Note 3: When cleaning the capstan shaft, be carefull not to move the oil seal. If the oil seal is moved, oil will leak.

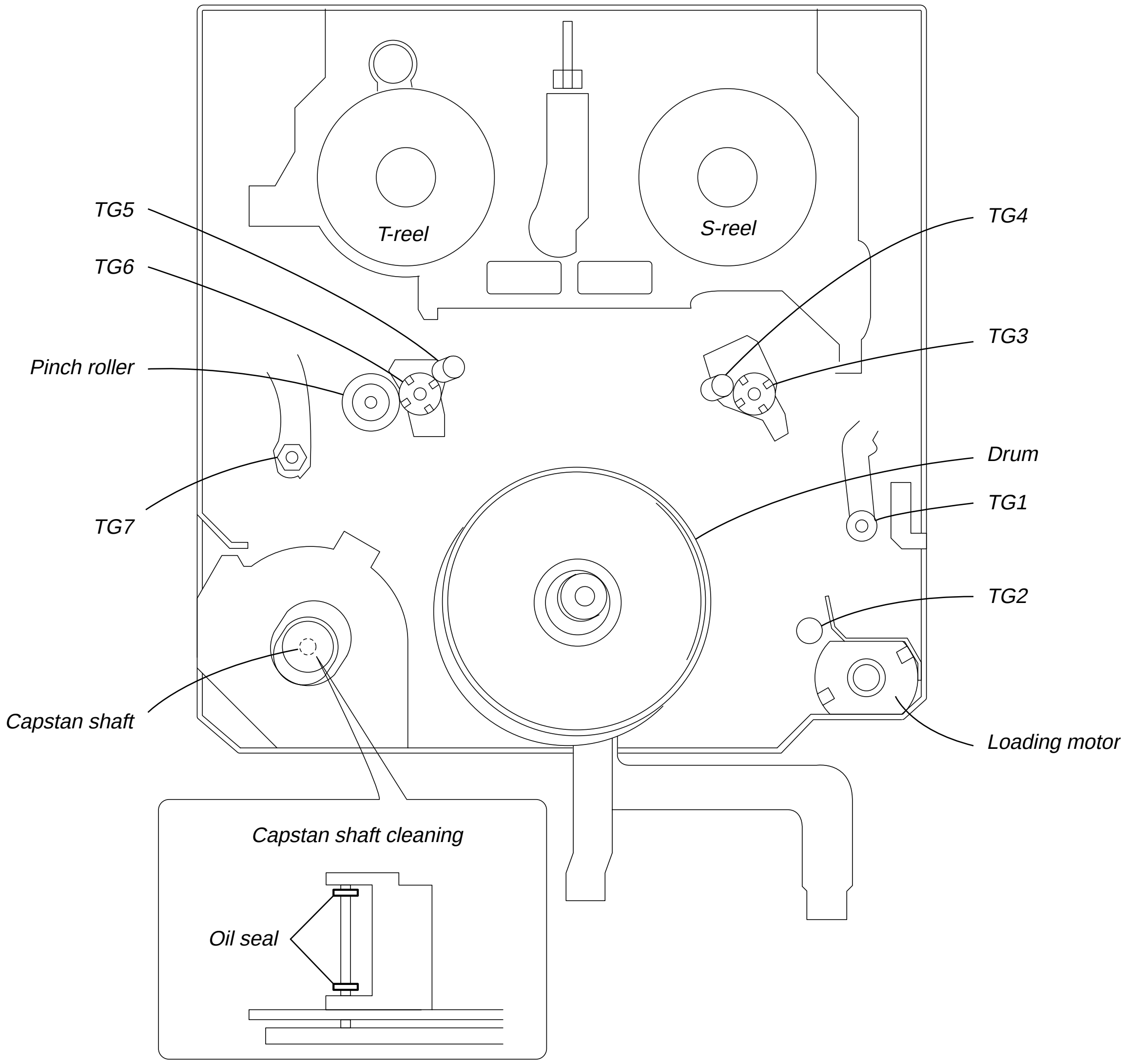


Fig. 2-1

2-3. Periodic Inspection List

Maintenance and inspection item		Operating hours (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Tape running surface cleaning	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
	Rotary drum cleaning and degaussing	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
Drive mechanism	Timing belt	—	☆	—	☆	—	☆	—	☆	—	☆	
	Capstan shaft	—	☆	—	☆	—	☆	—	☆	—	☆	Never attach oil to the tape running path during periodic inspection.
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back-tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD/RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○: Cleaning, ☆: Check

Note: When the machine is overhauled, replace the parts referring to the above list.

2-4. Appling Oil and Grease

When replacing or assembling the parts, use oil and grease while referring to the following.

On Oil

- Be sure to use the specified grease only. (If oil of different viscosity is used, it can cause various troubles.)
  Oil: Part No. 7-661-018-18
  (Mitsubishi diamond oil hydro fluid NT-68)
- The oil used for bearings must not contain any dust or other materials, otherwise excessive abrasion and seizure of the bearing could occur.
- A drop of oil means the amount of oil as shown in the illustration in the right, which is the amount that is attracted to the top of a rod of 2 mm diameter.

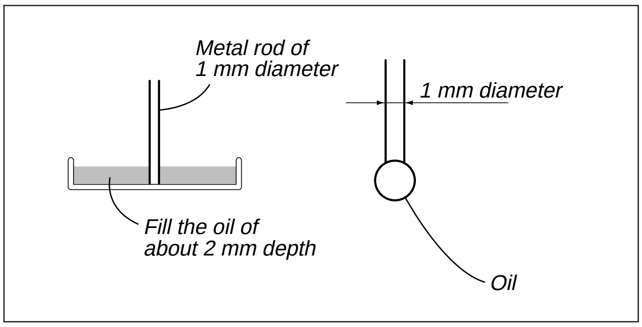


Fig. 2-2

On Grease

- Be sure to use the specified grease only. (If oil of different viscosity is used, it can cause various troubles.)
  Floil grease: Part No. 7-662-001-39
- Be sure to use grease into which dust is not mixed.
- The amount of grease is 1 to 1.5 mm diameter in length.

3. Before Replacement, Check or Adjustment

3-1. Phase Adjustment

The phase adjustment of this mechanism block has been adjusted by using the in-phase markings shown in the following figure. When replacing or assembling the parts, check the phase.

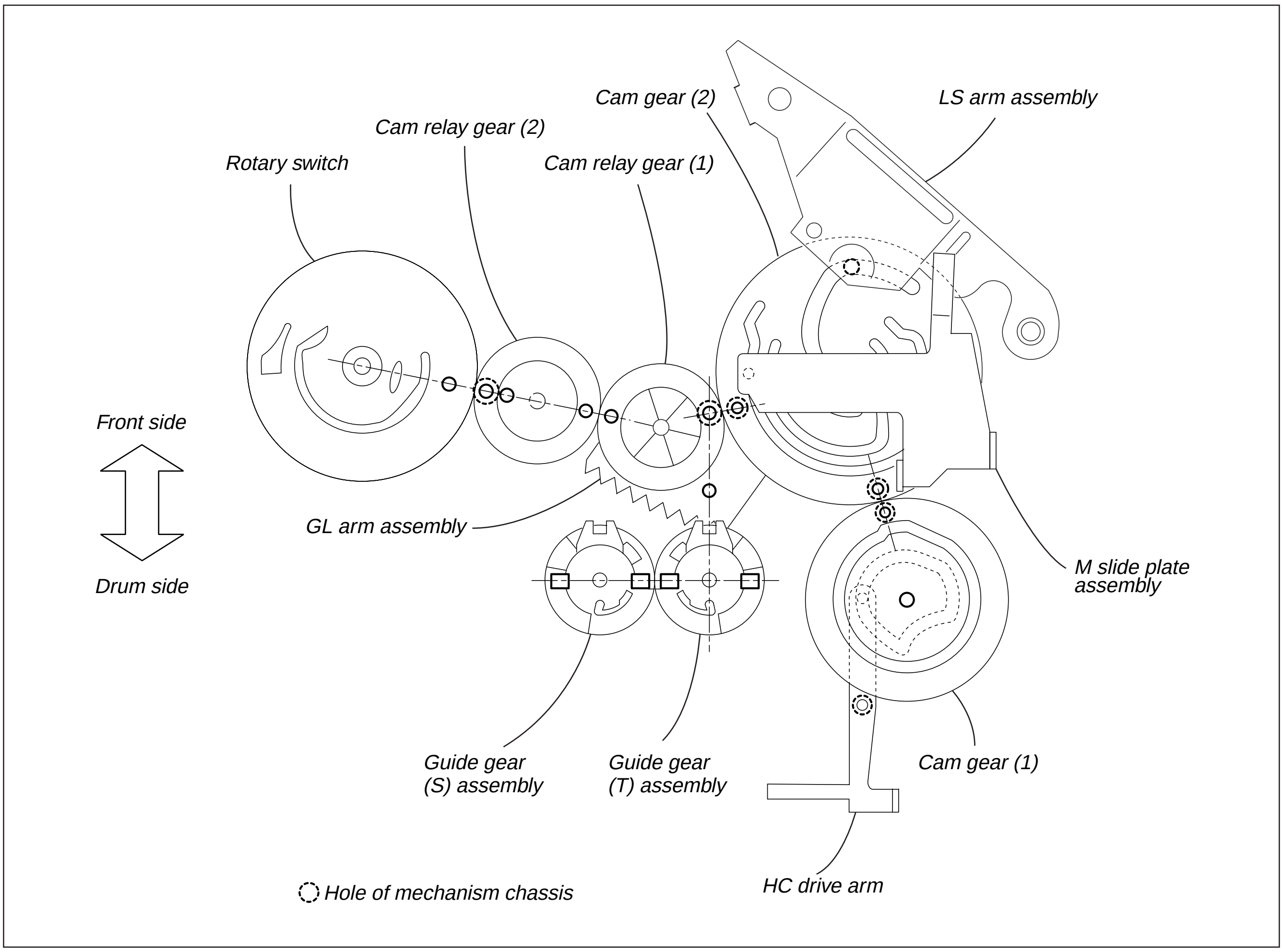

Cam gear (2)
LS arm assembly
Cam relay gear (2)
Rotary switch
Cam relay gear (1)
Front side
Drum side
GL arm assembly
M slide plate assembly
Guide gear (S) assembly
Guide gear (T) assembly
Cam gear (1)
HC drive arm
Hole of mechanism chassis

Fig. 3-1.

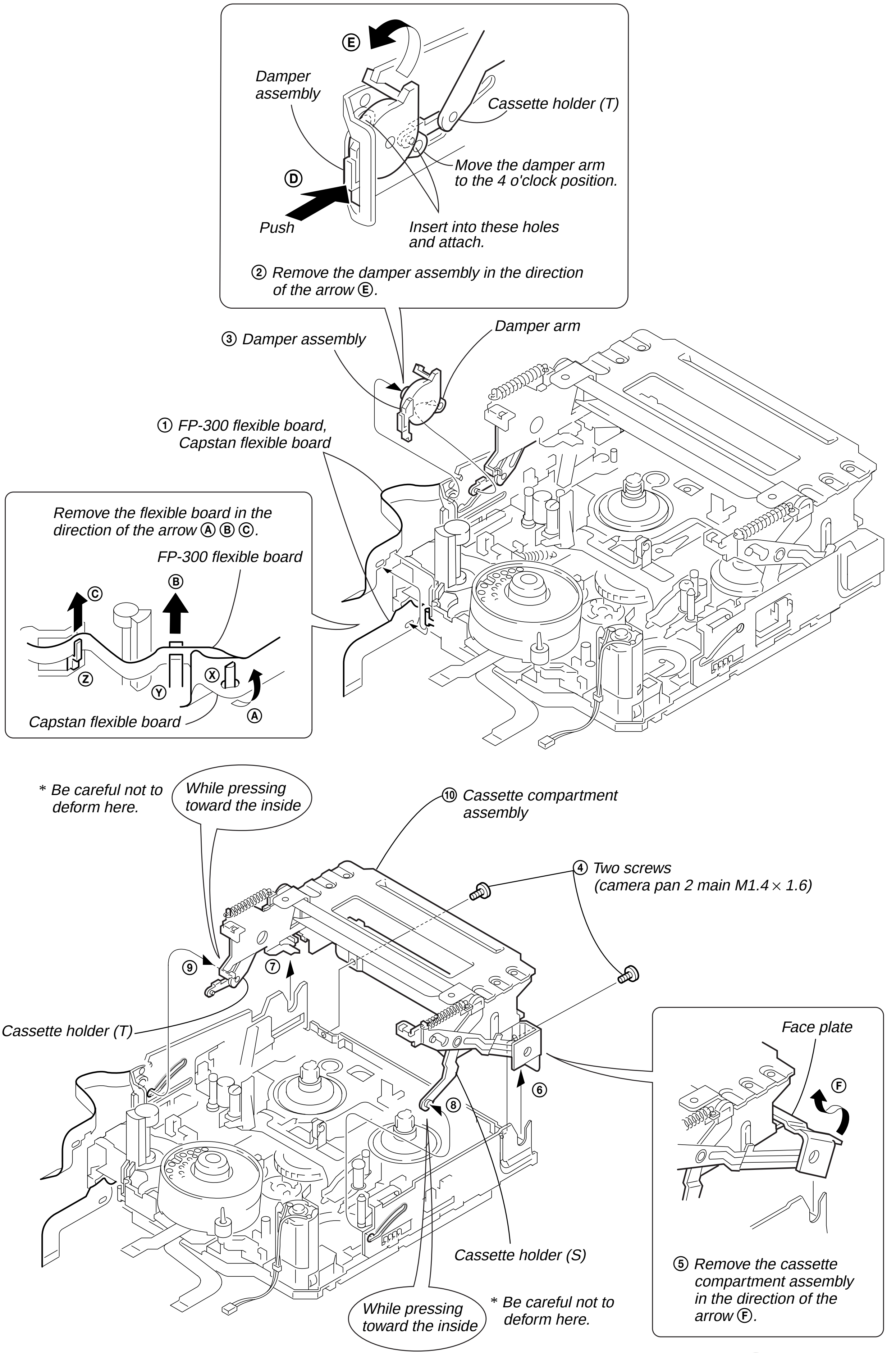
3-2. Cassette compartment assembly

1. Removal procedure

1) Set the EJ mode to move up the cassette compartment assembly ⑩.
2) Remove the capstan flexible board and flexible wiring board (FP-300) ① from the holders Ⓧ, Ⓨ and Ⓩ in the directions of the arrows Ⓐ, Ⓑ and Ⓒ.
3) Push the damper assembly ③ in the directions of the arrows Ⓓ and Ⓔ and remove it from the notch of the LS chassis block assembly.
4) Remove the two screws (camera pan2 main M1.4 × 1.6) ④.
5) With the cassette compartment assembly ⑩ half opened, move the face plate in the direction of the arrow Ⓕ and remove it from the grooves ⑥ and ⑦ on the LS chassis block assembly.
6) Remove the cassette holder (S) ⑧ and cassette holder (T) ⑨ of the cassette compartment assembly ⑩ from the groove on the LS chassis block assembly.

2. Attachment procedure

1) Set the USE mode.
2) Insert the cassette holder (S) ⑧ of the cassette compartment assembly ⑩ and cassette holder (T) ⑨ into the grooves on both sides of the LS chassis block assembly.
3) While moving down the cassette compartment assembly ⑩, lift up the face plate in the direction of the arrow Ⓕ and keep this status. Then, insert the face plate in the grooves ⑥ and ⑦ on the LS chassis block assembly.
4) Tighten the two screws (camera pan2 main M1.4×1.6) ④.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
5) Move the damper arm of the damper assembly ③ to the 4 o'clock position and insert the damper assembly into the hole on the LS chassis block assembly and the dowel of the cassette holder (T) ⑨.
6) Align the damper assembly ③ with the notch of the LS chassis block assembly and rotate the damper assembly ③ in the opposite direction to the arrow Ⓔ to fix it.


Ⓔ
Damper assembly
Cassette holder (T)
Move the damper arm to the 4 o'clock position.
Ⓓ
Push
Insert into these holes and attach.
③ Damper assembly
Damper arm
① FP-300 flexible board, Capstan flexible board
FP-300 flexible board
Ⓒ
Ⓑ
Ⓩ
Ⓧ
Ⓨ
Ⓐ
Capstan flexible board
* Be careful not to deform here.
While pressing toward the inside
⑩ Cassette compartment assembly
④ Two screws (camera pan 2 main M1.4 × 1.6)
⑨
⑦
Cassette holder (T)
Face plate
Ⓕ
⑥
⑧
Cassette holder (S)
While pressing toward the inside
* Be careful not to deform here.

② Remove the damper assembly in the direction of the arrow Ⓔ.

Remove the flexible board in the direction of the arrow Ⓐ Ⓑ Ⓒ.

⑤ Remove the cassette compartment assembly in the direction of the arrow Ⓕ.

When attaching it, coat the hatched ● portion with grease.

Fig. 3-2.

4. Check, Adjustment and Replacement

Note: For removal procedure of the cabinets, printed wiring boards and other parts, refer to “DISASSEMBLY” of the Service Manual of the respective models.

4-1. Drum Assembly

1. Removal procedure

1) Remove the three screws (drum fitting M1.4 × 2.5) ① fixing the drum and remove the drum.

2. Attachment procedure

1) Align the two reference holes A and B on the rear of the drum with the reference pins A and B of the drum base assembly.
2) Attach the drum with the three screws (drum fitting M1.4 × 2.5) ① in the order of Ⓐ, Ⓑ and Ⓒ.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
3) Clean the drum while referring to 2-1.
4) Adjust the tape path. (Refer to “4. Tape Path Adjustment”.)

Note: Do not touch the outside circumference.

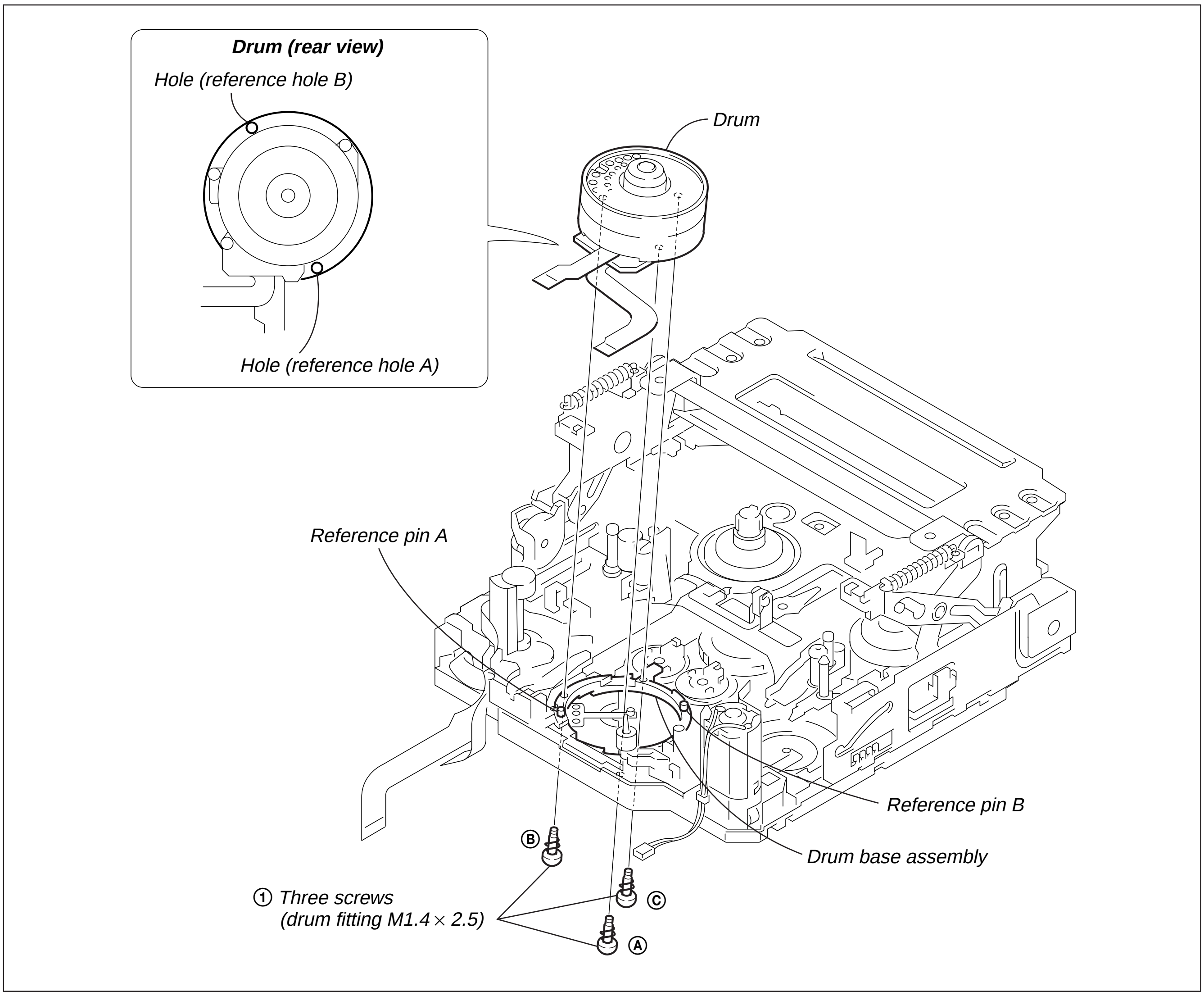

Drum (rear view)
Hole (reference hole B)
Hole (reference hole A)
Drum
Reference pin A
Reference pin B
Drum base assembly
Ⓑ
Ⓒ
Ⓐ
① Three screws (drum fitting M1.4 × 2.5)

Fig. 4-1.

4-2. HCL Arm Assembly, Loading Motor Assembly

1. Removal procedure

1) Hook the HC arm spring in the direction of the arrow Ⓑ.
2) Remove the HCL arm assembly ② from the loading motor assembly ④.
3) Remove the screw (M1.4 × 2.5) ③.
4) Remove the three claws of the loading motor assembly ④ from the mechanism chassis assembly in the direction of the arrow Ⓐ.

2. Attachment procedure

1) Coat the worm shaft and gear of the loading motor assembly ④ with grease.
2) Insert the three claws of the loading motor assembly ④ into the groove on the mechanism chassis assembly.
3) Attach the screw (M1.4 × 2.5) ③.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
4) Check the position of the HCL arm assembly ② and the HC drive arm. Then attach the HCL arm assembly ② to the loading motor assembly ④.
5) Hook the HC arm spring ① on the notch of the loading motor assembly ④.
6) Clean the drum assembly. (Refer to section 2-1.)

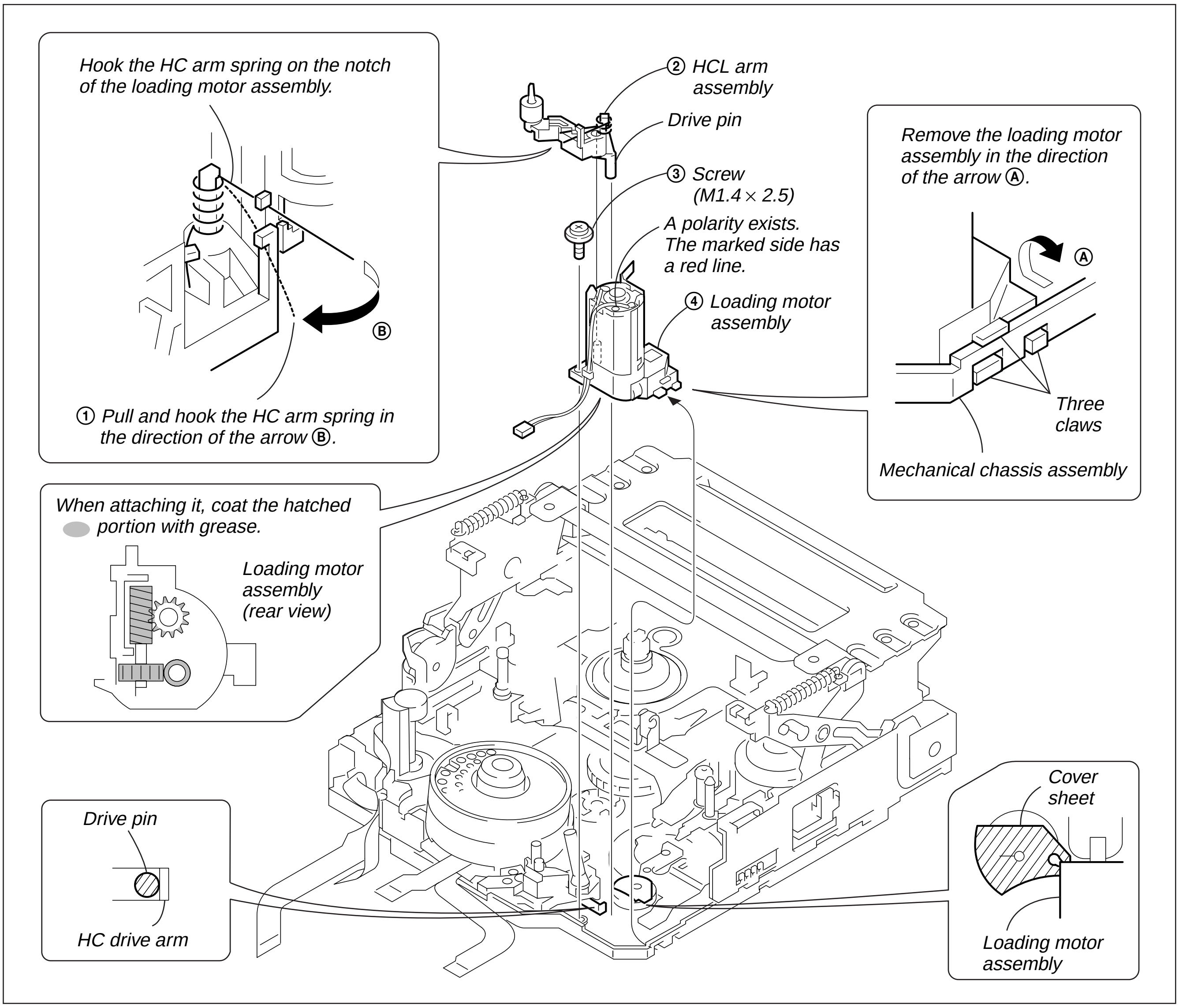

Hook the HC arm spring on the notch of the loading motor assembly.
Ⓑ
① Pull and hook the HC arm spring in the direction of the arrow Ⓑ.
② HCL arm assembly
Drive pin
③ Screw (M1.4 × 2.5)
A polarity exists. The marked side has a red line.
④ Loading motor assembly
Remove the loading motor assembly in the direction of the arrow Ⓐ.
Ⓐ
Three claws
Mechanical chassis assembly
When attaching it, coat the hatched ● portion with grease.
Loading motor assembly (rear view)
Drive pin
HC drive arm
Cover sheet
Loading motor assembly

Fig. 4-2.

4-3. Drum Base Assembly, Drum Earth

1. Removal procedure

1) Remove the capstan flexible board and flexible wiring board (FP-300) from the holders Ⓧ, Ⓨ and Ⓩ in the direction of the arrow.
2) Remove the drum assembly. (Refer to section 4-1.)
3) Remove the screw (M1.4 × 2.5) ②.
4) Remove the claw Ⓓ of the guide rail T2 ③ from the hole Ⓔ of the drum base assembly in the direction of the arrow Ⓕ.
5) Remove the three screws (M1.4 × 2.5) ④.
6) Remove the drum base assembly ⑤ in the direction of the arrow.
7) Remove the screw (screw assy PW M1.7 × 2.6) ⑥.
8) Remove the drum earth ⑦ and earth spacer ⑧.

2. Attachment procedure

1) Attach the ground spacer ⑧ and drum ground ⑦ with the screw (screw assy PW M1.7 × 2.6) ⑥.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
2) Align the drum base assembly ⑤ with the reference pin and tighten the three screws (M1.4 × 2.5) ④ in the order of Ⓖ, Ⓗ and Ⓘ.
3) Insert the claw Ⓓ of the guide rail T2③ into the hole Ⓔ of the drum base assembly ⑤ and tighten the screw (M1.4 × 2.5) ②.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 kgf•cm)
4) Remove the drum assembly. (Refer to 4-1.)
5) Attach the flexible wiring board (FP-300) ① and capstan flexible board to the drum base assembly.
6) Clean the tape running path. (Refer to 2-2.)

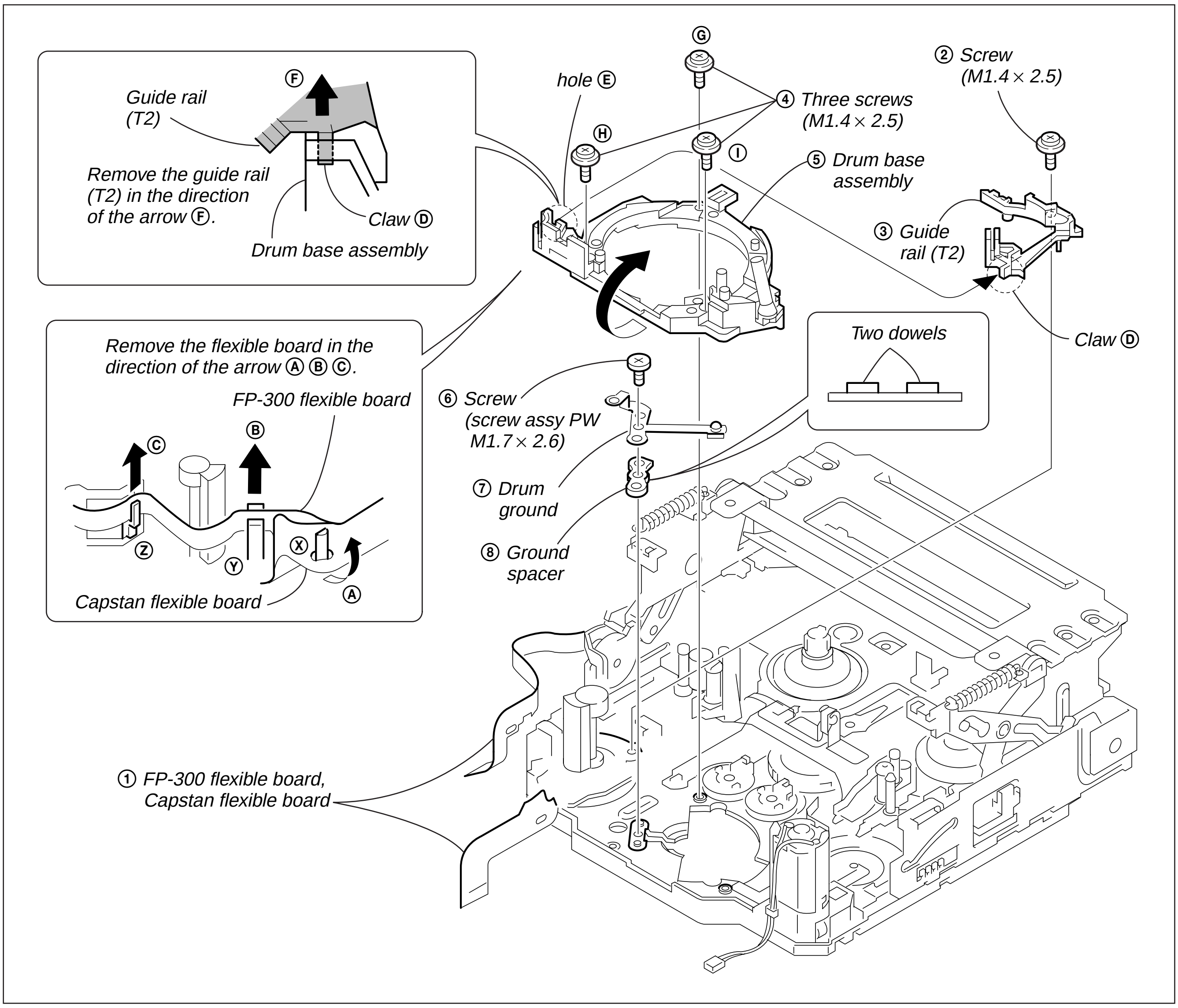

Ⓕ
Guide rail
(T2)
Remove the guide rail
(T2) in the direction
of the arrow Ⓕ.
Claw Ⓓ
Drum base assembly
Remove the flexible board in the
direction of the arrow Ⓐ Ⓑ Ⓒ.
FP-300 flexible board
Ⓒ
Ⓑ
Ⓩ
Ⓨ
Ⓧ
Ⓐ
Capstan flexible board
Ⓖ
hole Ⓔ
Ⓗ
Ⓘ
④ Three screws
(M1.4 × 2.5)
⑤ Drum base
assembly
② Screw
(M1.4 × 2.5)
③ Guide
rail (T2)
Claw Ⓓ
Two dowels
⑥ Screw
(screw assy PW
M1.7 × 2.6)
⑦ Drum
ground
⑧ Ground
spacer
① FP-300 flexible board,
Capstan flexible board

Fig. 4-3.

4-4. Guide Rail T2, Capstan Motor

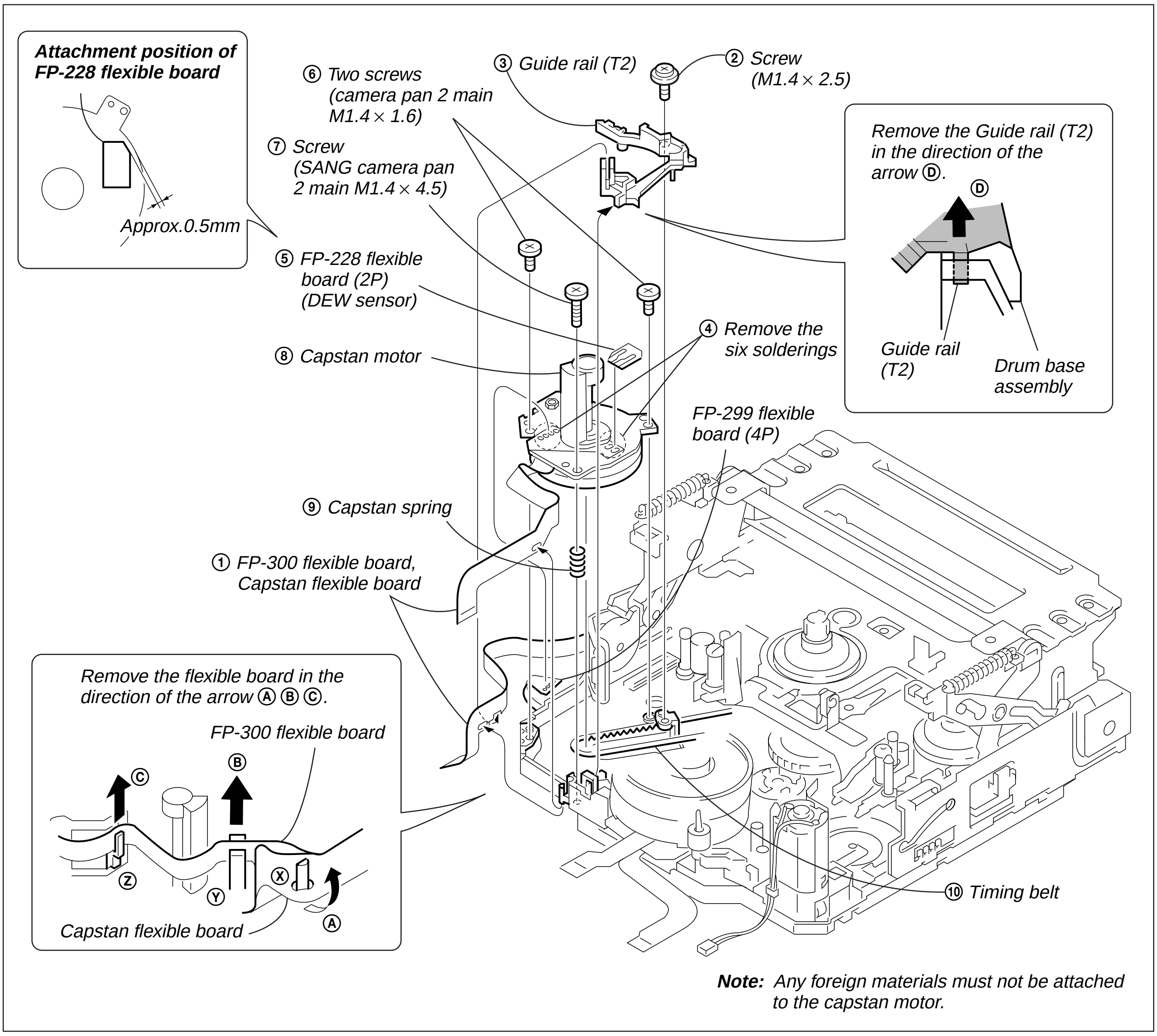
1. Removal procedure

1) Remove the capstan flexible board and flexible wiring board (FP-300) ① from the holders Ⓧ, Ⓨ and Ⓩ in the directions of the arrows Ⓐ, Ⓑ and Ⓒ.
2) Remove the screw (M1.4 × 2.5) ②.
3) Remove the claw of the guide rail T2 ③ from the hole on the drum base assembly in the direction of the arrow Ⓓ.
4) Remove the six solderings ④.
5) Remove the FP-228 flexible wiring board (2P) (DEW sensor) ⑤.
6) Remove the two screws (camera pan2 main M1.4 × 1.6) ⑥ and the screw (SANG camera pan2 main M1.4 × 4.5) ⑦.
7) Remove the capstan motor ⑧.
8) Remove the capstan spring ⑨ (be careful not to drop the capstan spring) and timing belt ⑩.

2. Attachment procedure

1) Hook the timing belt ⑩ on the gear of the capstan motor ⑧, attach the capstan motor while aligning it with the reference boss of the mechanism chassis assembly.
2) Attach the screw (SANG camera pan2 M1.4 × 4.5) ⑦ and capstan spring ⑨. (temporally attachment)
3) Attach the two screws (camera pan2 M1.4 × 1.6) ⑥.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
4) Attach the six solderings ④ to the FP-228 flexible wiring board ⑤ (2P) (DEW sensor) and the FP-299 flexible wiring board (4P).
5) Insert the guide rail T2 ③ into the hole on the drum base assembly and tighten the screw (M1.4 × 2.5) ②.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
6) Attach the capstan flexible board and the flexible wiring board (FP-300) ① to the holders Ⓧ, Ⓨ and Ⓩ.
7) Adjust the height of the capstan motor using the thickness gauge (Ref. No. J-16). (Refer to 5-3.)

Note: Be careful not to touch the center of the capstan motor ⑩ shaft and the FP-228 flexible wiring board (DEW sensor) with soldering iron or other tool.


Attachment position of FP-228 flexible board
Approx.0.5mm
⑥ Two screws (camera pan 2 main M1.4 × 1.6)
⑦ Screw (SANG camera pan 2 main M1.4 × 4.5)
③ Guide rail (T2)
② Screw (M1.4 × 2.5)
Remove the Guide rail (T2) in the direction of the arrow Ⓓ.
Ⓓ
Guide rail (T2)
Drum base assembly
⑤ FP-228 flexible board (2P) (DEW sensor)
④ Remove the six solderings
⑧ Capstan motor
FP-299 flexible board (4P)
⑨ Capstan spring
① FP-300 flexible board, Capstan flexible board
Remove the flexible board in the direction of the arrow Ⓐ Ⓑ Ⓒ.
FP-300 flexible board
Ⓒ
Ⓑ
Ⓩ
Ⓨ
Ⓧ
Ⓐ
Capstan flexible board
⑩ Timing belt

Note: Any foreign materials must not be attached to the capstan motor.

Fig. 4-4.

4-5. Blind Plate, Lock Guide

1. Removal procedure

1) Remove the diode D001 (tape LED) ① from the notch of the plate ④.
2) Remove the flexible wiring board ② (FP-301) from T-shaped portion of the blind plate ④ in the direction of the arrow Ⓐ.
3) Remove the screw (camera pan2 main M1.4 × 1.6) ③.
4) Release the hook on the notches Ⓖ, Ⓓ, Ⓔ and Ⓕ of the blind plate ④ in the direction of the arrow Ⓑ.
5) Remove the reel release lever ⑤ in the direction of the arrow Ⓒ.

2. Attachment procedure

1) Attach the reel release lever ⑤ to the blind plate ④.
2) Hang the notches Ⓖ, Ⓓ, Ⓔ and Ⓕ of the blind plate ④ on the hook.
3) Attach the screw (camera pan2 main M1.4 × 1.6) ③.
Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
4) Attach the flexible wiring board (FP-301) ② to the T-shaped portion of the blind plate ④.
5) Attach the diode (tape LED) ① to the notch of the blind plate ④.

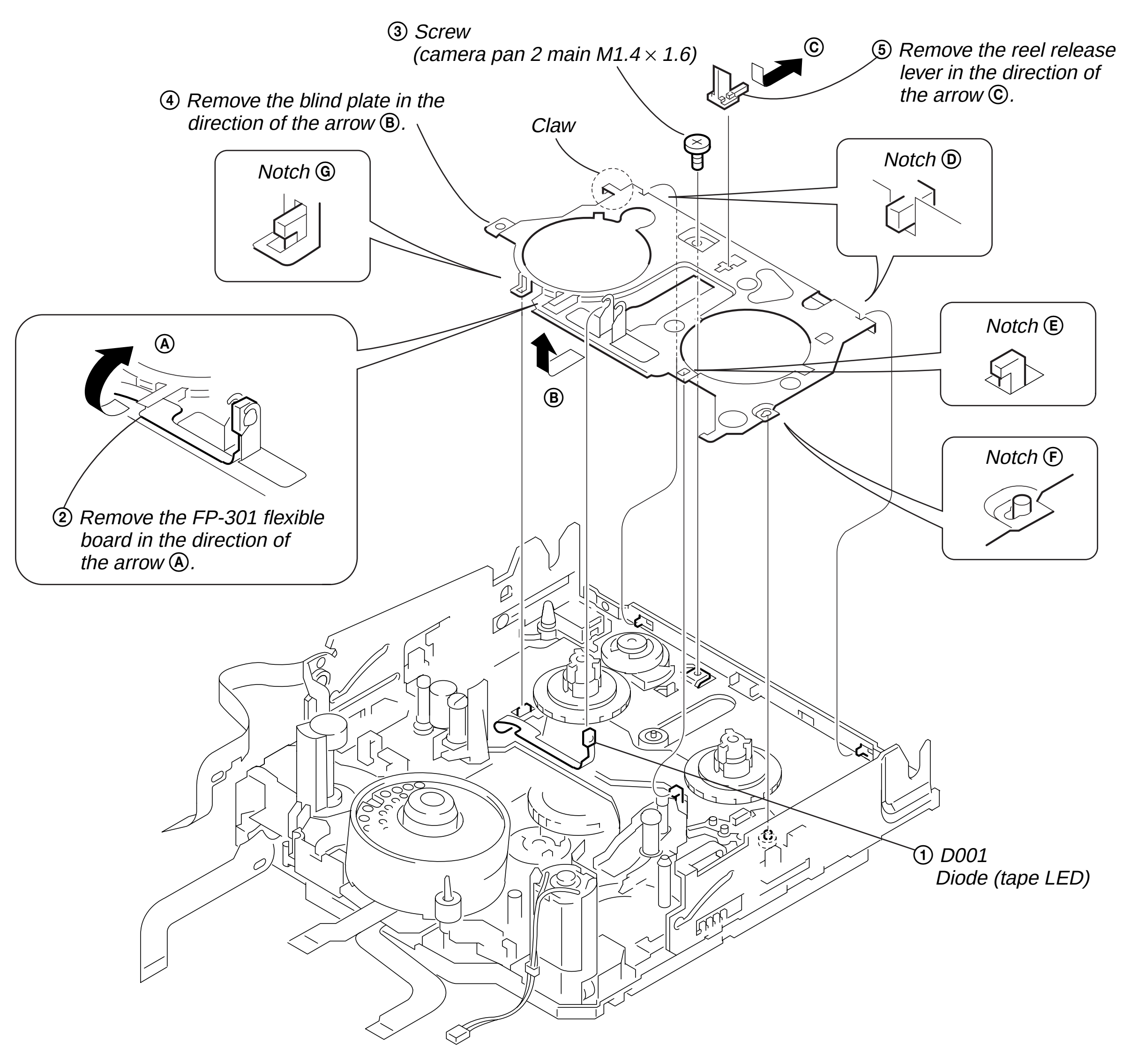

③ Screw
(camera pan 2 main M1.4 × 1.6)
Ⓒ
⑤ Remove the reel release lever in the direction of the arrow Ⓒ.
④ Remove the blind plate in the direction of the arrow Ⓑ.
Claw
Notch Ⓖ
Notch Ⓓ
Ⓐ
Ⓑ
Notch Ⓔ
Notch Ⓕ
② Remove the FP-301 flexible board in the direction of the arrow Ⓐ.
① D001
Diode (tape LED)

Fig. 4-5.

4-6. Reel Table (T) Assembly, T Soft Assembly

1. Removal procedure

1) Remove the blind plate. (Refer to 4-5.)
2) Open the claw of the reel table T assembly ① in the directions of the arrows Ⓑ and Ⓒ and remove the reel table T assembly.
3) Remove the T soft assembly ② in the direction of the arrow Ⓐ.
4) Remove the T ratchet spring ③.
5) Remove the T ratchet arm ④ in the direction of the arrow Ⓓ.

2. Attachment procedure

1) Insert the T ratchet arm ④ into the groove on the LS chassis block assembly to attach it.
2) Attach the T ratchet spring ③ to the notch of the T ratchet arm ④ and LS chassis block assembly.
3) Insert the T soft assembly into the groove on the LS chassis block assembly.
4) Check the location of the reel table T assembly and attach the LS chassis block assembly to the shaft.
5) Attach the blind plate. (Refer to 4-5.)

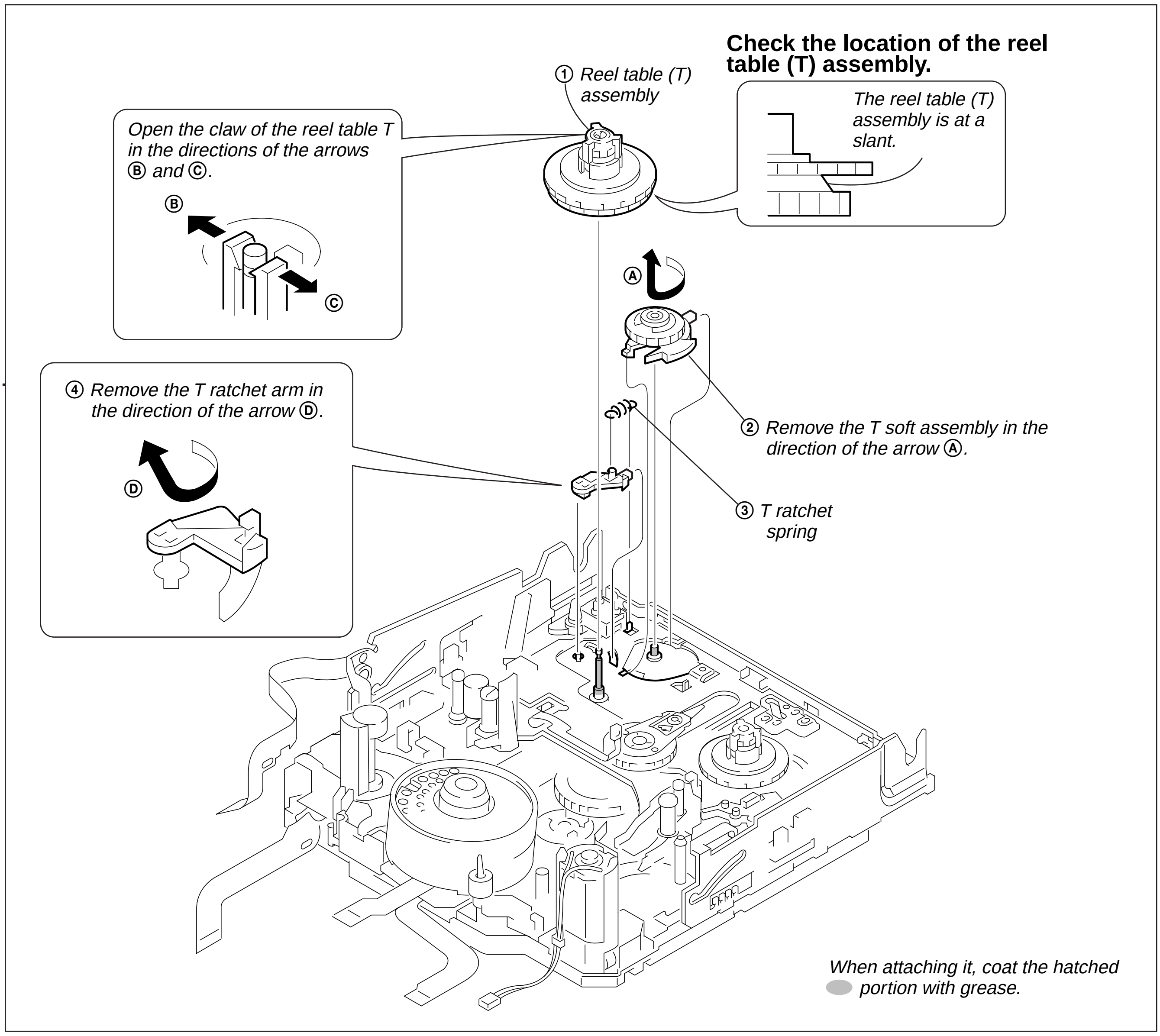

Check the location of the reel table (T) assembly.
① Reel table (T) assembly
The reel table (T) assembly is at a slant.
Open the claw of the reel table T in the directions of the arrows Ⓑ and Ⓒ.
Ⓑ
Ⓒ
Ⓐ
④ Remove the T ratchet arm in the direction of the arrow Ⓓ.
Ⓓ
② Remove the T soft assembly in the direction of the arrow Ⓐ.
③ T ratchet spring
When attaching it, coat the hatched ● portion with grease.

Fig. 4-6.

4-7. S Ratchet RE Plate, Cassette Guide S

1. Removal procedure

1) Remove the blind plate. (Refer to 4-5.)
2) Remove the RE return plate spring ①.
3) Remove the S ratchet spring ②.
4) Remove the S ratchet arm ③ in the direction of the arrow Ⓐ.
   Note: Do not reuse the S ratchet arm.
5) Remove the S ratchet RE plate.
6) Remove the screw (camera tapping M1.4 × 2)⑤.
7) Remove the cassette guide S ⑥ in the direction of the arrow Ⓑ.

2. Attachment procedure

1) Attach the cassette guide S ⑥ to the notch of the LS chassis block assembly with the screw (camera tapping M1.4 × 2).
2) Attach the S ratchet RE plate ④ to the shaft of the LS chassis block assembly.
3) Attach the S ratchet arm ③ to the shaft of the LS chassis block assembly. At this time, the dowel of the S ratchet RE plate ④ must be inserted into the U-shaped notch of the S ratchet arm ③.
4) Hook the S ratchet spring ② on the notch of the S ratchet arm and attach it to the notch of the LS chassis block assembly.
5) Attach the RE return plate spring ① to the notch of the LS chassis block assembly.
6) Attach the blind plate. (Refer to 4-5.)

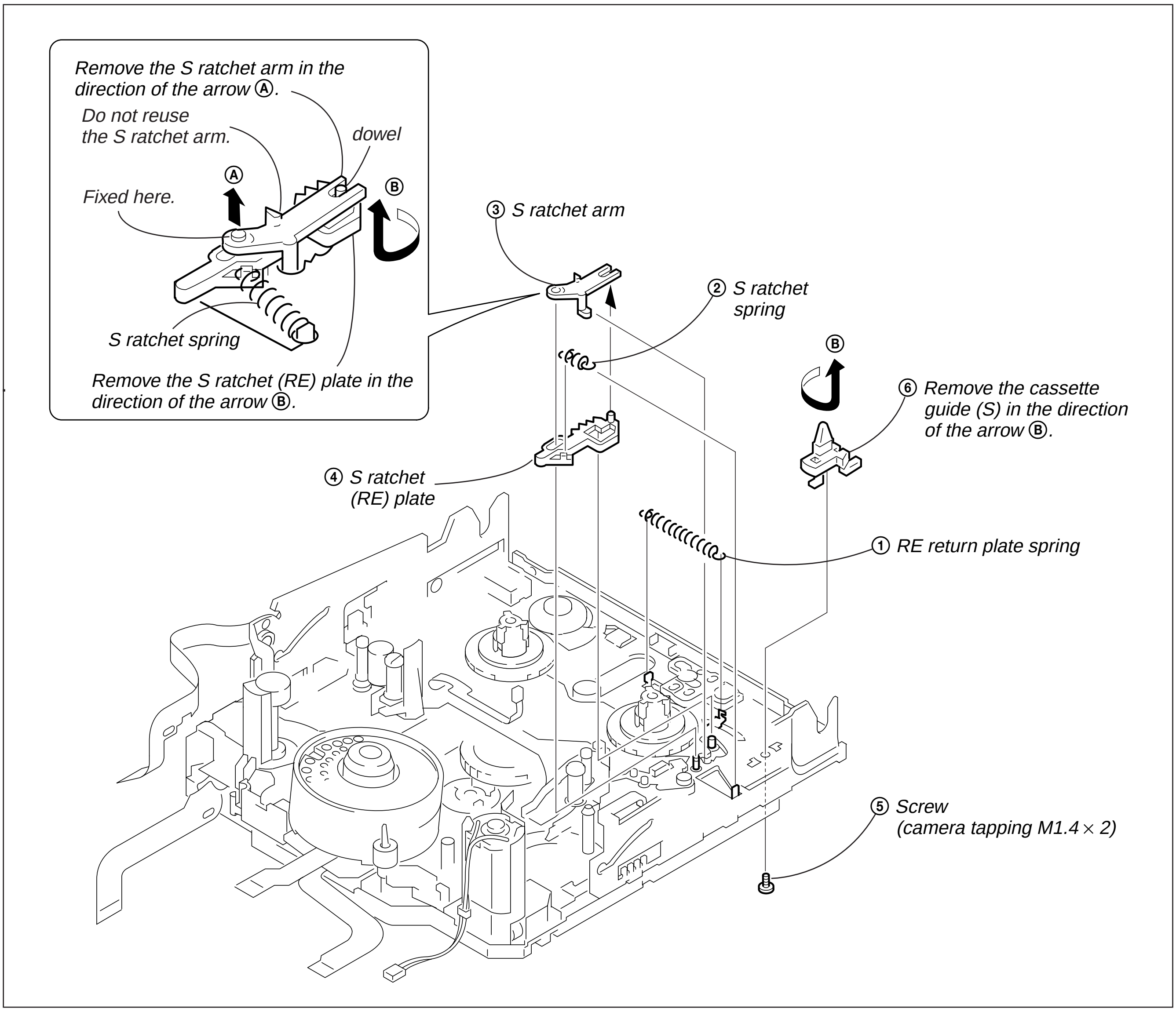

Remove the S ratchet arm in the direction of the arrow Ⓐ.
Do not reuse the S ratchet arm.
dowel
Ⓐ
Ⓑ
Fixed here.
S ratchet spring
Remove the S ratchet (RE) plate in the direction of the arrow Ⓑ.
③ S ratchet arm
② S ratchet spring
Ⓑ
⑥ Remove the cassette guide (S) in the direction of the arrow Ⓑ.
④ S ratchet (RE) plate
① RE return plate spring
⑤ Screw (camera tapping M1.4 × 2)

Fig. 4-7.

4-8. R Drive Gear Assembly, LS Cam Plate

1. Removal procedure

1) Remove the blind plate. (Refer to 4-5.)
2) Remove the lumiler cut washer (0.98 × 3 × 0.13) ①.
3) Remove the R drive gear assembly ②.
4) Remove the HLC cut (1.8 × 4 × 0.5) ③ and the two screws (precision type3 +P1.7 × 1.8) ④.
5) Remove the LS cam plate ⑤.

2. Attachment procedure

1) Attach the R drive gear assembly ② with the lumiler cut washer (0.98 × 3 × 0.13) ①.
2) Align the LS cam plate ⑤ with the two dowels of the LS chassis block assembly, temporarily fix the LS cam plate ⑤ with the two screws (precision type3 +P1.7 × 1.8), then attach it with the HLC cut (1.8 × 4 × 0.5) ③.
3) Adjust the position of the LS cam plate. (Refer to 4-9.)

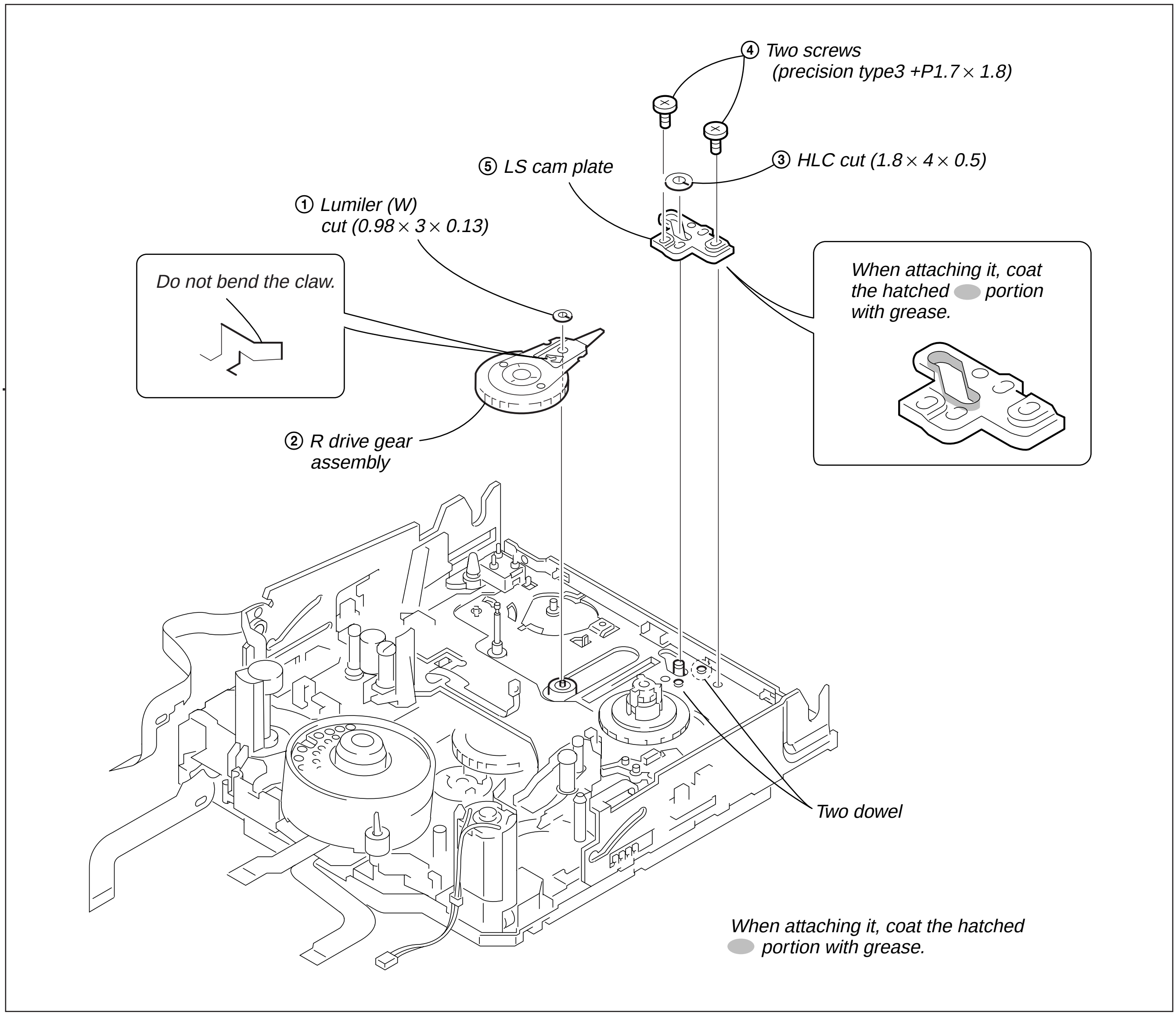
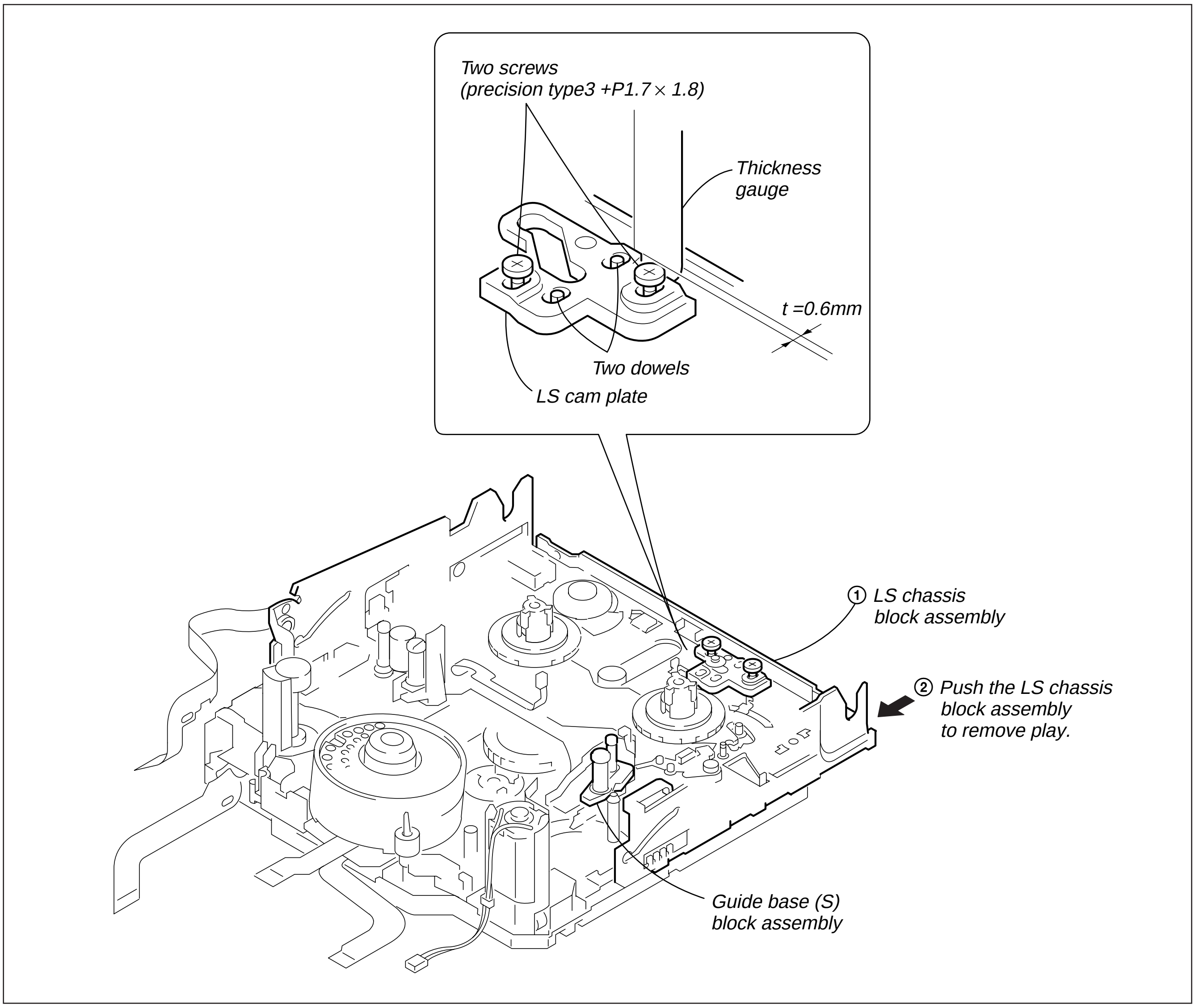

④ Two screws
(precision type3 +P1.7 × 1.8)
⑤ LS cam plate
③ HLC cut (1.8 × 4 × 0.5)
① Lumiler (W)
cut (0.98 × 3 × 0.13)
Do not bend the claw.
When attaching it, coat the hatched ● portion with grease.
② R drive gear assembly
Two dowel
When attaching it, coat the hatched ● portion with grease.

Fig. 4-8.

4-9. LS Cam Plate Position Adjustment

1. Adjustment Procedure

1) Perform loading of the LS chassis block assembly ① until the tip of the guide base (S) assembly reaches the drum base assembly.
2) Loosen the two screws (precision type3 +P1.7 × 1.8) ② of the LS cam plate and slide the LS chassis block assembly to the drum side so as to remove play.
3) Insert the thickness gauge 0.6 mm (Ref. No. J-16) between the LS cam plate and the LS chassis block assembly. Push the LS cam plate in the direction opposite to the drum to remove play.
4) Fix the two screws (precision type3 +P1.7 × 1.8) ②.
   Tightening torque: 0.108 ± 0.01 N•m (1.1 kgf•cm)



Two screws
(precision type3 +P1.7 × 1.8)
Thickness gauge
t =0.6mm
Two dowels
LS cam plate
① LS chassis block assembly
② Push the LS chassis block assembly to remove play.
Guide base (S) block assembly

Fig. 4-9.

4-10. LS Chassis Block Assembly

1. Removal procedure

1) Move the LS chassis block assembly between USE and LOAD.
2) Remove the blind plate. (Refer to 4-5.)
3) Remove the R drive gear assembly. (Refer to 4-8.)
4) Remove the HCL cut (1.8 × 4 × 0.5) ①.
5) Remove the three screws (M1.4 × 2.5) ②.
6) Remove the LS chassis block assembly ③ in the direction of the arrow Ⓐ.

2. Attachment procedure

1) Insert the LS guide roller and LS guide T2 pin of the mechanical chassis block assembly into the slot of the LS chassis block assembly ④.
2) Insert the pin of the LS arm assembly into the cam groove on the LS cam plate, face the TG7 drive pin ⑤ in the direction of the arrow Ⓑ, and insert it to the two slot of the mechanical chassis. Then, tighten the three screws (M1.4 × 2.5) ② in the order of Ⓒ, Ⓓ and Ⓔ.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
3) Attach the HCL cut (1.8 × 4 × 0.5) ① to the pin of the LS arm assembly.
4) Attach the R drive gear assembly. (Refer to 4-8.)
5) Attach the blind plate. (Refer to 4-5.)
6) Clean the tape running path. (Refer to 2-2.)

Note: Each arm must move smoothly.

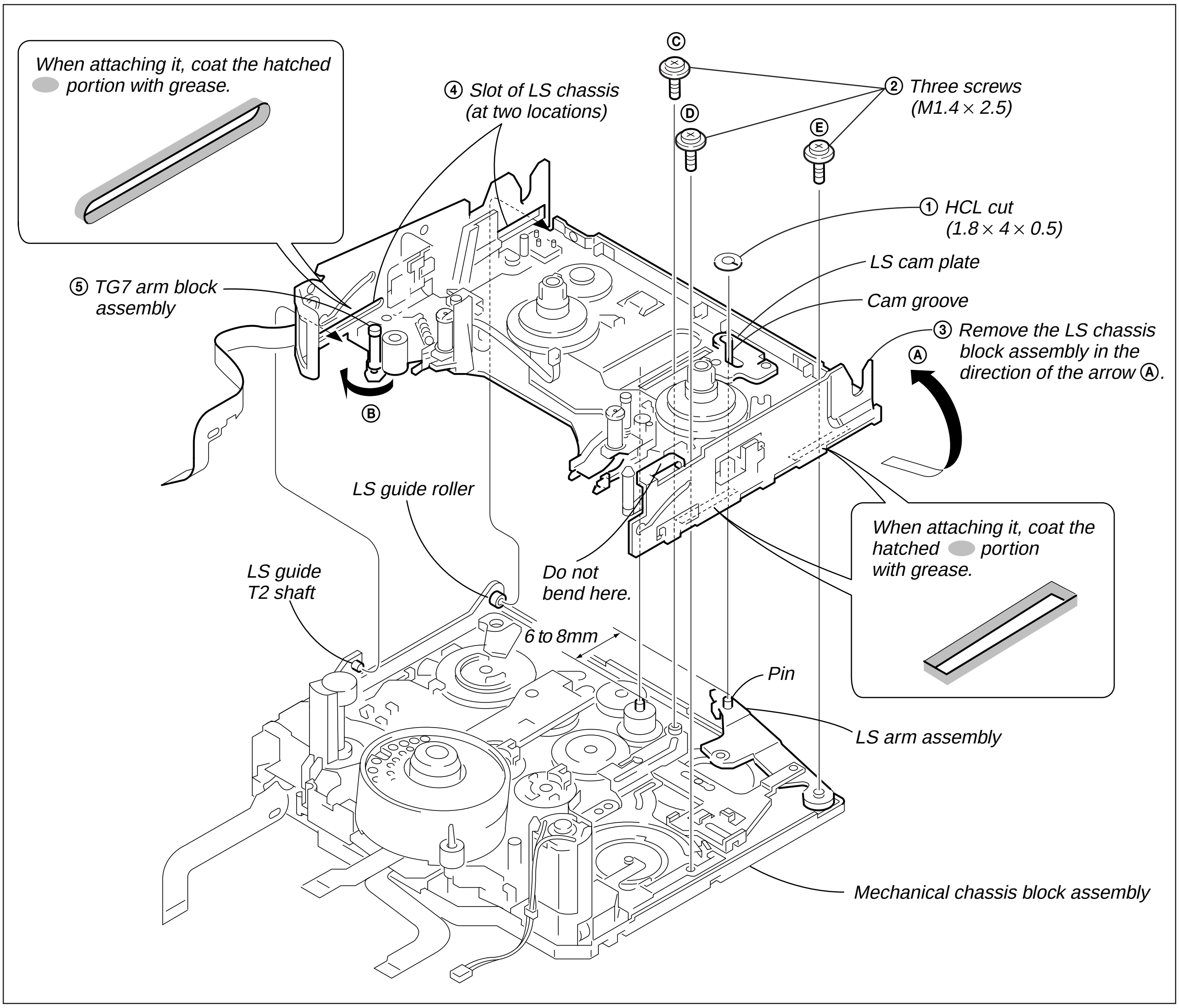

When attaching it, coat the hatched
● portion with grease.
④ Slot of LS chassis
(at two locations)
Ⓒ
Ⓓ
Ⓔ
② Three screws
(M1.4 × 2.5)
① HCL cut
(1.8 × 4 × 0.5)
LS cam plate
Cam groove
⑤ TG7 arm block
assembly
③ Remove the LS chassis
block assembly in the
direction of the arrow Ⓐ.
Ⓐ
Ⓑ
LS guide roller
LS guide
T2 shaft
Do not
bend here.
6 to 8mm
When attaching it, coat the
hatched ● portion
with grease.
Pin
LS arm assembly
Mechanical chassis block assembly

Fig. 4-10.

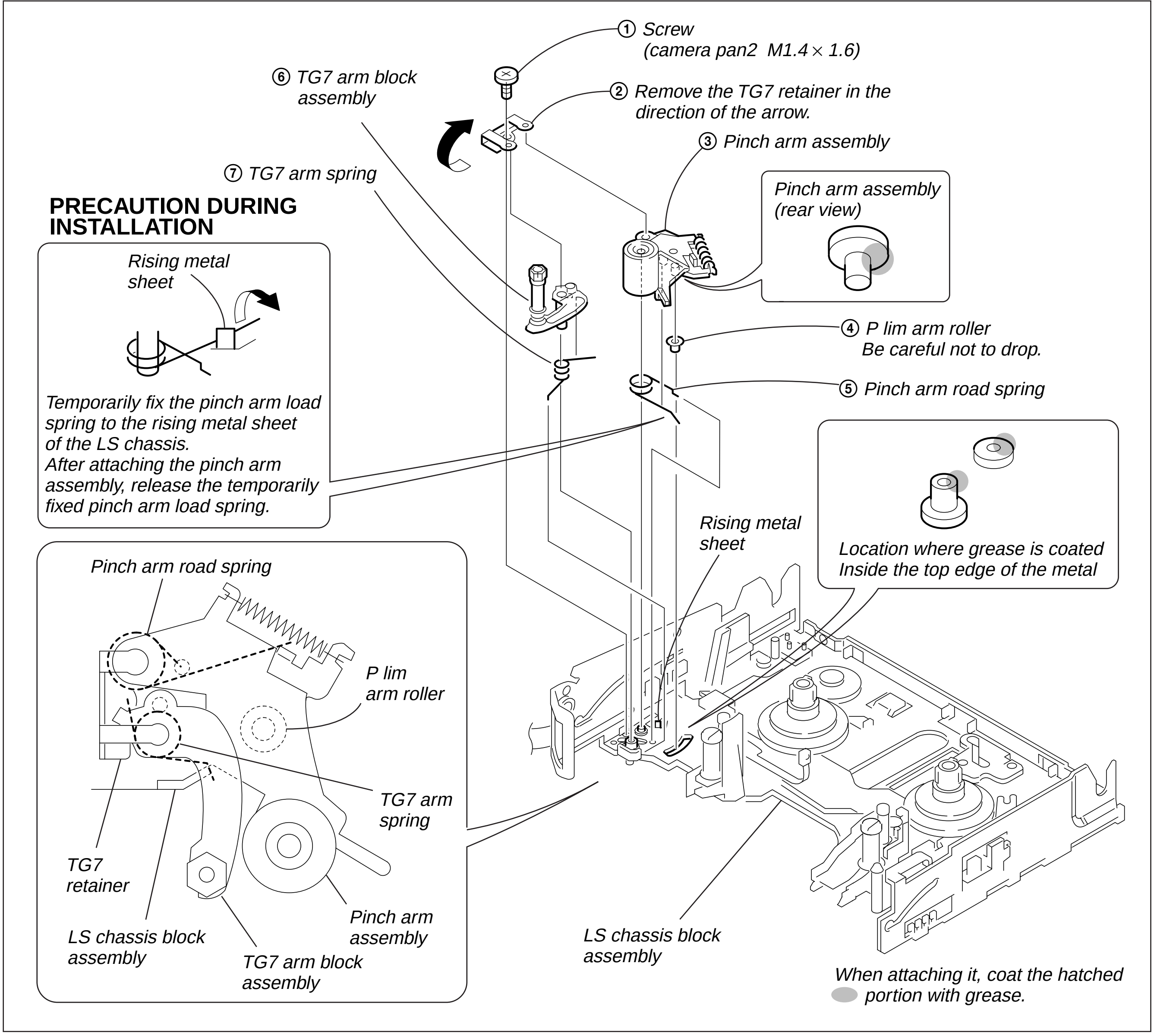
4-11. TG7 Arm Block Assembly, Pinch Arm Assembly

1. Removal procedure

1) Remove the LS chassis block assembly. (Refer to 4-10.)
2) Remove the screw (camera pan2 M1.4 × 1.6) ①.
3) Remove the TG7 retainer ② in the direction of the arrow.
4) Remove the TG7 arm block assembly ⑥ and TG7 arm spring ⑦.
5) Remove the pinch roller arm assembly ③.
6) Remove the P lim arm roller ④ and pinch arm load spring ⑤.

2. Attachment procedure

1) Attach the P lim arm roller ④ to the pinch roller arm assembly ③.
2) Insert one end of the pinch arm load spring ⑤ into the hole on the rising metal sheet of the LS chassis block assembly, and hook the other end of the spring on the position setting protrusion of the LS-057 board.
3) Attach the pinch roller arm assembly ③ to the shaft of the LS chassis block assembly, and hook the pinch arm load spring ⑤ on the rising metal sheet of the pinch roller assembly ③.
4) Hook the TG7 arm spring ⑦ on the shaft of the LS chassis block assembly while the hook side of the spring is facing downward.
5) When attaching the TG7 arm block assembly ⑥ to the shaft of the LS chassis block assembly, hook the hook side of the TG7 arm spring ⑦ on the rising metal sheet of the LS chassis block assembly and hook the top side of the spring to the notch of the TG7 arm block assembly ⑥.
6) Attach the TG7 retainer ② with the screw (camera pan2 M1.4 × 1.6) ①.
7) Remove the LS chassis block assembly. (Refer to 4-10.)
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
8) Clean the tape running path. (Refer to 2-2.)


① Screw
(camera pan2 M1.4 × 1.6)
⑥ TG7 arm block assembly
② Remove the TG7 retainer in the direction of the arrow.
③ Pinch arm assembly
⑦ TG7 arm spring
PRECAUTION DURING INSTALLATION
Pinch arm assembly (rear view)
Rising metal sheet
④ P lim arm roller
Be careful not to drop.
⑤ Pinch arm road spring
Rising metal sheet
Pinch arm road spring
P lim arm roller
TG7 arm spring
TG7 retainer
Pinch arm assembly
LS chassis block assembly
TG7 arm block assembly
LS chassis block assembly

Temporarily fix the pinch arm load spring to the rising metal sheet of the LS chassis. After attaching the pinch arm assembly, release the temporarily fixed pinch arm load spring.

Location where grease is coated Inside the top edge of the metal

When attaching it, coat the hatched ● portion with grease.

Fig. 4-11.

4-12. Guide Base (T) Block Assembly, Guide Base (S) Block Assembly

1. Removal procedure

1) Remove the LS chassis block assembly. (Refer to 4-10.)
2) Align the claw of the guide base (T) block assembly ① with the notch of the guide arm T and remove the guide base (T) block assembly.
3) Remove the screw (M1.4 × 2.5) ② and remove the guide rail (T) ③.
4) Align the claw of the guide base (S) block assembly ④ with the notch of the guide arm S and remove the guide base (S) block assembly.
5) Remove the screw (M1.4 × 2.5) ⑤ and remove the guide rail (S) ⑥.

2. Attachment procedure

1) Align the holes on the guide rail (S) ⑥ with the protrusions (at two locations) of the LS chassis block assembly and attach the guide rail (S) ⑥ with the screw (M1.4 × 2.5) ⑤.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
2) Attach the guide base (S) block assembly ④ while aligning it with the groove on the guide arm S.
3) Align the holes on the guide rail (T) ③ with the protrusions (at two locations) of the LS chassis block assembly and attach the guide rail (T) ③ with the screw (M1.4 × 2.5) ②.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
4) Attach the guide base (T) block assembly ① while aligning it with the groove on the guide arm T.
   Note: Do not forget to hook the plate spring.
5) Withdraw the joint portion of the guide arm S and the guide arm T in the directions of the arrows Ⓐ and Ⓑ.
6) Attach the LS chassis block assembly to the mechanical chassis. (Refer to 4-10.)
7) Clean the tape running path. (Refer to 2-2.)

Note: Be careful of the shape of the guide base T/S block assembly.
Guide base (T) block assembly = Guide base (small)
Guide base (S) block assembly = Guide base (large)

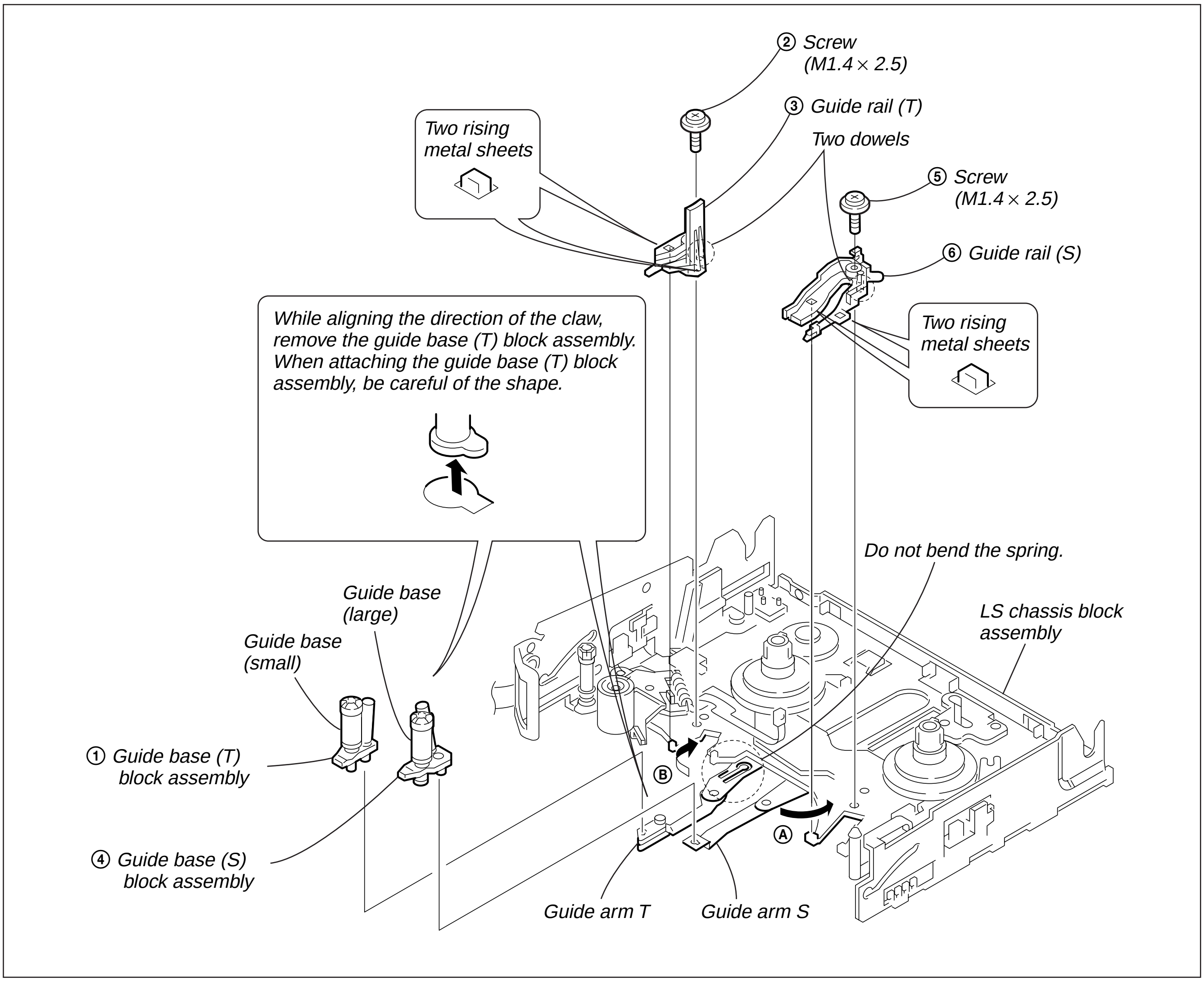

② Screw
(M1.4 × 2.5)
③ Guide rail (T)
Two dowels
Two rising metal sheets
⑤ Screw
(M1.4 × 2.5)
⑥ Guide rail (S)
Two rising metal sheets
While aligning the direction of the claw, remove the guide base (T) block assembly. When attaching the guide base (T) block assembly, be careful of the shape.
Do not bend the spring.
LS chassis block assembly
Guide base (large)
Guide base (small)
① Guide base (T) block assembly
④ Guide base (S) block assembly
Ⓑ
Ⓐ
Guide arm T
Guide arm S

Fig. 4-12.

4-13. TG1 Arm, Reel Table (S) Assembly, Push Switch (3Key)

1. Removal procedure

1) Remove the TG1 arm spring ①.
   Note: Take note of the position where the spring has been hooked.
2) Remove the TG1 arm ②.
3) Open the claw of the reel table (S) assembly ④ in the directions of the arrows Ⓑ and Ⓒ and remove the reel table S assembly.
4) Remove the RVS arm spring ⑤.
5) Rotate the S ratchet arm ③ in the direction of the arrow Ⓐ and remove the BT band assembly ⑥.
6) Remove the lock guide ⑦.
7) Remove the four solderings of the LS-057 board.
8) Remove the two claws ⑨ of the cassette guide T ⑫ from the notch of the LS chassis.
9) Remove the push switch (3key) ⑪ by releasing the two claws of the cassette guide T ⑫.

2. Attachment procedure

1) Attach the push switch (3key) ⑪ to the cassette guide T ⑫ with the two claws ⑩.
2) Attach the cassette guide T ⑫ to the notch of the LS chassis block assembly with the two claws ⑨.
3) Solder the cassette guide T ⑫ to the LS-057 board at the four locations.
4) Attach the lock guide ⑦.
5) Attach the BT band assembly ⑥.
6) Check the location of the reel table S ④. Then, rotate the S ratchet arm ③ in the direction of the arrow Ⓐ and insert the band of the BT band assembly ⑥ into the groove on the side.
7) Attach the BT band assembly to the TG1 arm ② and attach it to the mechanism chassis block assembly.
8) Check the shape of the hook of the TG1 arm spring ①. Hook one end of the spring on the TG1 arm ②. Then, hook the other end of the spring on the same location of the LS chassis block assembly where you have taken note when the spring is removed.
9) Attach the RVS arm spring.
10) Check the TG1 back-tension. (Refer to 5-1.)
    Note: The BT band assembly ⑤ must be completely inserted into the groove on the side of the reel table (S) ④.

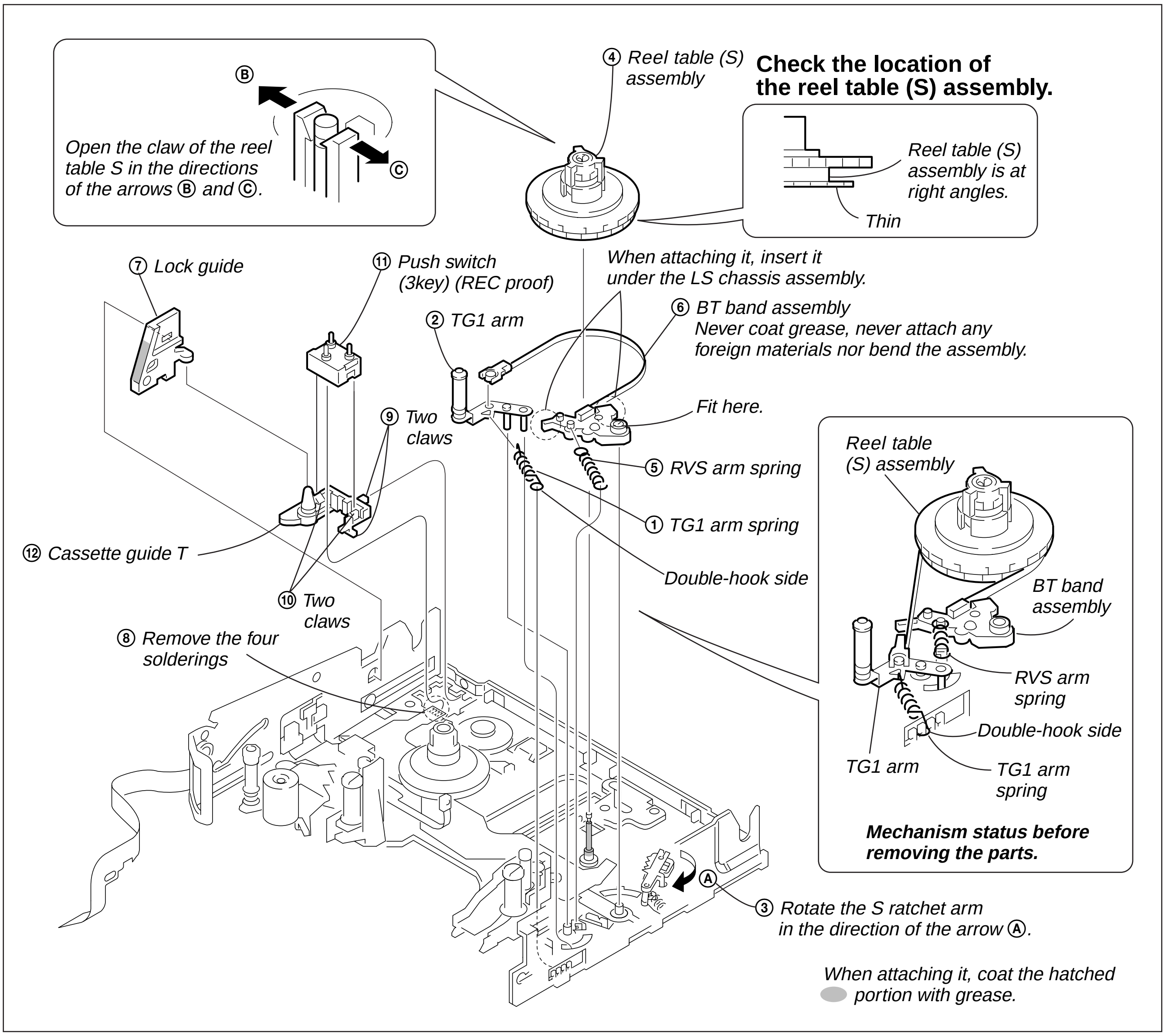

Ⓑ
Ⓒ
Open the claw of the reel table S in the directions of the arrows Ⓑ and Ⓒ.
④ Reel table (S) assembly
Check the location of the reel table (S) assembly.
Reel table (S) assembly is at right angles.
Thin
⑦ Lock guide
⑪ Push switch (3key) (REC proof)
When attaching it, insert it under the LS chassis assembly.
② TG1 arm
⑥ BT band assembly Never coat grease, never attach any foreign materials nor bend the assembly.
⑨ Two claws
Fit here.
⑤ RVS arm spring
① TG1 arm spring
Double-hook side
⑫ Cassette guide T
⑩ Two claws
⑧ Remove the four solderings
Reel table (S) assembly
BT band assembly
RVS arm spring
Double-hook side
TG1 arm
TG1 arm spring
Mechanism status before removing the parts.
Ⓐ
③ Rotate the S ratchet arm in the direction of the arrow Ⓐ.
When attaching it, coat the hatched portion with grease.

Fig. 4-13.

4-14. Hall Element (H001, H002 (T/S Reel)), Photo Transistor (Q001, Q002 (Tape Top/Tape End), D001 (Tape LED)), LED (D001 (Tape LED))

1. Removal procedure

1) Remove the LS chassis block assembly. (Refer to 4-10.)
2) Remove the LS grease cover.
3) Remove the two solderings and remove Q001 (tape top).
4) Remove the two solderings and remove Q002 (tape end).
5) Remove the two solderings and remove D001 (tape LED).
6) Remove the four solderings respectively from H001 (T reel) and H002 (S reel) and remove the H001 and H002.

2. Attachment procedure

1) Solder H001 (T reel) and H002 (S reel) respectively at the four locations.
2) Solder Q002 (tape end) at the two locations.
3) Solder Q001 (tape top) at the two locations.
4) Solder D001 (tape LED) at the two locations.
5) Attach the LS grease cover.
6) Attach the LS chassis block assembly to the mechanical chassis. (Refer to 4-10.)

Note: Be careful of the plarities of the Hall element (H001, H002), Phototransistor (Q001, Q002) and LED (D001).

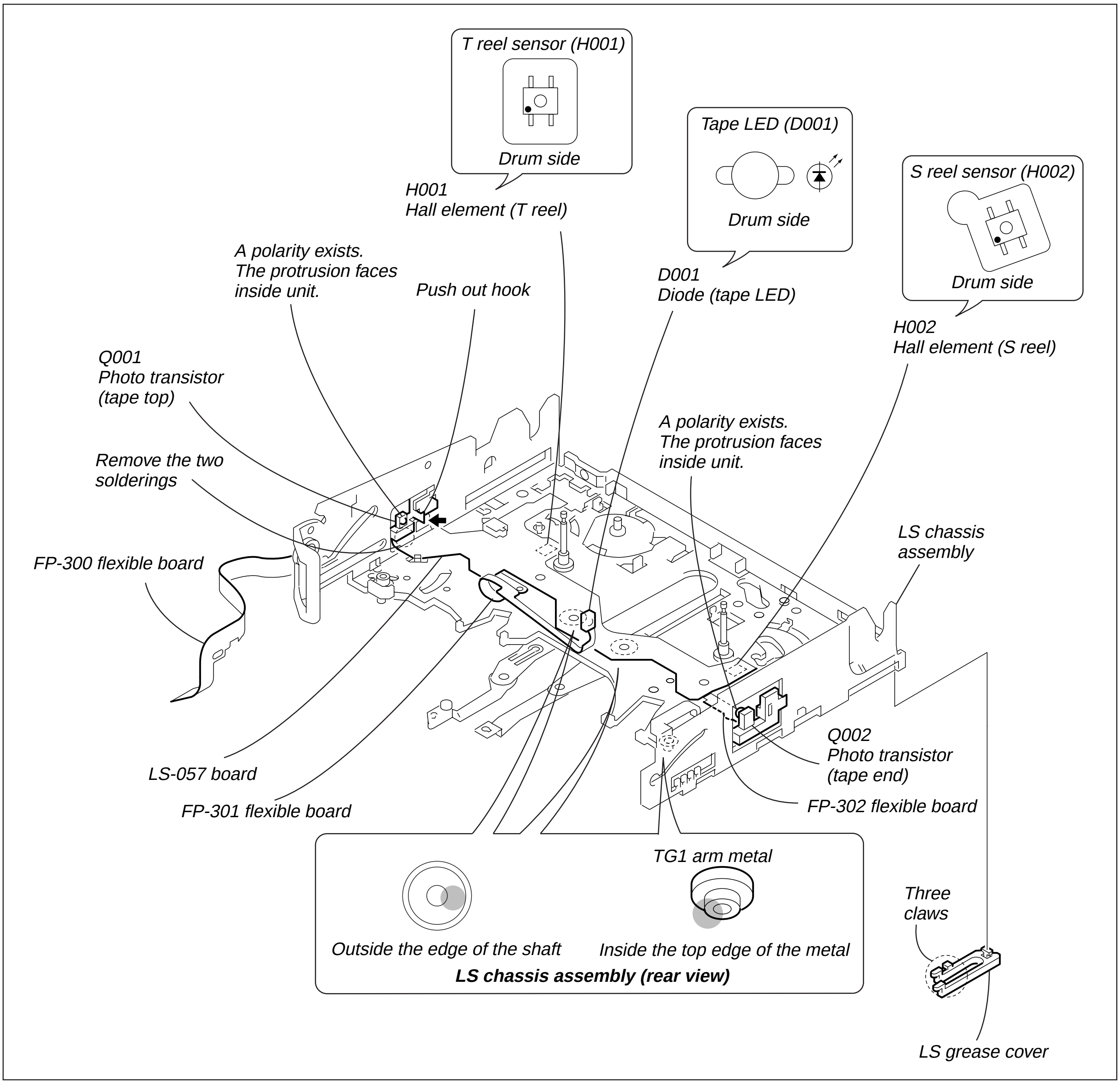

T reel sensor (H001)
Drum side
Tape LED (D001)
Drum side
S reel sensor (H002)
Drum side
H001
Hall element (T reel)
A polarity exists.
The protrusion faces inside unit.
Push out hook
D001
Diode (tape LED)
H002
Hall element (S reel)
Q001
Photo transistor
(tape top)
A polarity exists.
The protrusion faces inside unit.
Remove the two solderings
LS chassis assembly
FP-300 flexible board
LS-057 board
FP-301 flexible board
Q002
Photo transistor
(tape end)
FP-302 flexible board
TG1 arm metal
Three claws
Outside the edge of the shaft
Inside the top edge of the metal
LS chassis assembly (rear view)
LS grease cover

Fig. 4-14.

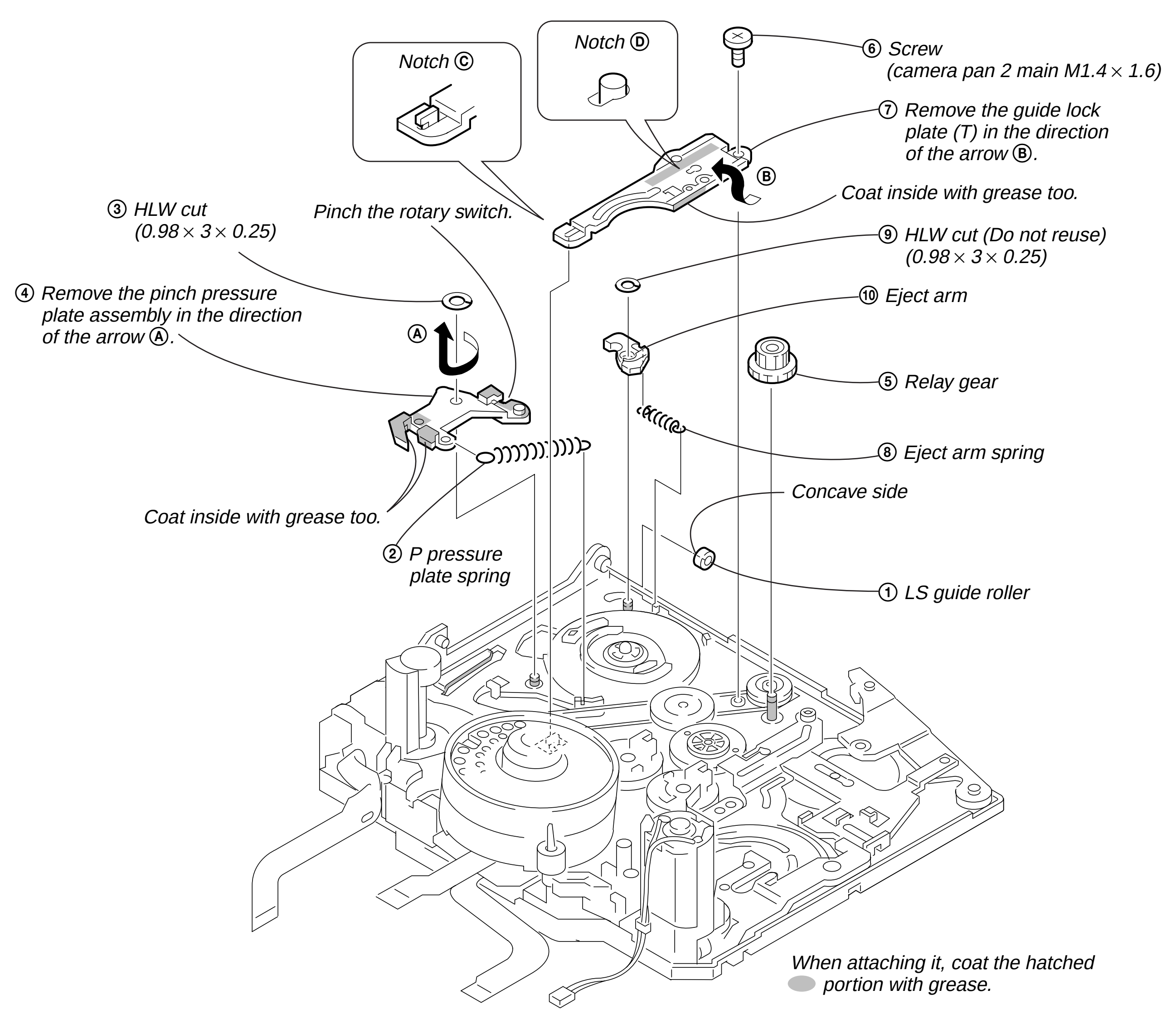
4-15. LS Guide Roller, Guide Lock Plate (T), Pinch Pusher Assembly, Eject Arm

1. Removal procedure

1) Remove the LS chassis block assembly. (Refer to 4-10.)
2) Remove the LS guide roller ①.
3) Remove the P pressure plate spring ②.
4) Remove the HLW cut (0.98 × 3 × 0.25) ③.
5) Remove the pitch pressure plate assembly ④ in the direction of the arrow Ⓐ.
6) Remove the relay gear ⑤.
7) Remove the screw (camera pan2 M1.4 × 1.6) ⑥.
8) Remove the guide lock plate (T) ⑦ in the direction of the arrow Ⓑ.
9) Remove the eject arm spring ⑧ and HLW cut (0.98 × 3 × 0.25) ⑨.
   Note: Do not reuse the HLW cut.
10) Remove the eject arm ⑩.

2. Attachment procedure

1) Attach the eject arm spring ⑧ to the eject arm ⑩.
2) Hook one end of the eject arm spring ⑧ on the protrusion of the main chassis block assembly and attach the eject arm to the shaft.
3) Attach the HLW cut (0.98 × 3 × 0.25) ⑨.
   Do not reuse the HLW cut.
4) Attach the guide lock plate T ⑦ while aligning it with the notches Ⓒ and Ⓓ.
5) Attach the screw (camera pan2 M1.4 × 1.6) ⑥.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
6) Attach the relay gear ⑤.
7) Attach the pinch pusher plate ④ with the HLW cut (0.98 × 3 × 0.25) ③.
8) Attach the P pressure plate spring ②.
   Insert the concave side of the LS guide roller ① into the shaft to attach the LS guide roller.
   Note: Insert the roller completely.
9) Attach the LS chassis block assembly to the mechanical chassis. (Refer to 4-10.)



Notch Ⓓ
⑥ Screw (camera pan 2 main M1.4 × 1.6)
Notch Ⓒ
⑦ Remove the guide lock plate (T) in the direction of the arrow Ⓑ.
Ⓑ
Coat inside with grease too.
③ HLW cut (0.98 × 3 × 0.25)
Pinch the rotary switch.
⑨ HLW cut (Do not reuse) (0.98 × 3 × 0.25)
④ Remove the pinch pressure plate assembly in the direction of the arrow Ⓐ.
⑩ Eject arm
Ⓐ
⑤ Relay gear
⑧ Eject arm spring
Concave side
Coat inside with grease too.
② P pressure plate spring
① LS guide roller
When attaching it, coat the hatched ● portion with grease.

Fig. 4-15.

4-16. Rotary Switch, Cam Relay Gear, Change Gear Assembly, Timing Belt

Before replacing the timing belt, remove the guide rail T2 and capstan motor. (Refer to 4-4.)

1. Removal procedure

1) Remove the LS chassis block assembly. (Refer to 4-10.)
2) Remove the guide lock plate (T), pinch pressure assembly and eject arm. (Refer to 4-15.)
3) Remove the cam relay gear ①.
4) Remove the timing belt ②.
5) Remove the HLW cut (0.98 × 3 × 0.25) ③ and change gear assembly ④.
6) Remove the four solderings ⑤ and remove the FP-299 flexible wiring board ⑥.
7) Push up the dowel of the rotary switch ⑦ from the bottom of the mechanism chassis assembly and remove the rotary switch in the direction of the arrow.

2. Attachment procedure

1) Insert the dowel of the rotary switch ⑦ into the hole on the mechanism chassis assembly and attach the rotary switch clockwise.
2) Align the FP-299 flexible wiring board ⑥ with the reference hole on the mechanism chassis and solder the flexible wiring board to the rotary switch ⑦ (at four locations).
3) Attach the change gear assembly ④ with the HLC cut (0.98 × 3 × 0.25)③.
4) Attach the timing belt ②.
   Note: There must be a clearance between the rotary switch ⑦ and timing belt ②.
5) Attach the cam relay gear ①.
   The in-phase markings of the rotary switch ⑦, cam relay gear (2) and cam relay gear (1) must be aligned.
6) Attach the guide lock plate (T), pinch pressure assembly and eject arm. (Refer to 4-15.)
7) Attach the LS chassis block assembly to the mechanical chassis. (Refer to 4-10.)
8) Clean the shaft of the capstan motor. (Refer to 2-2.)

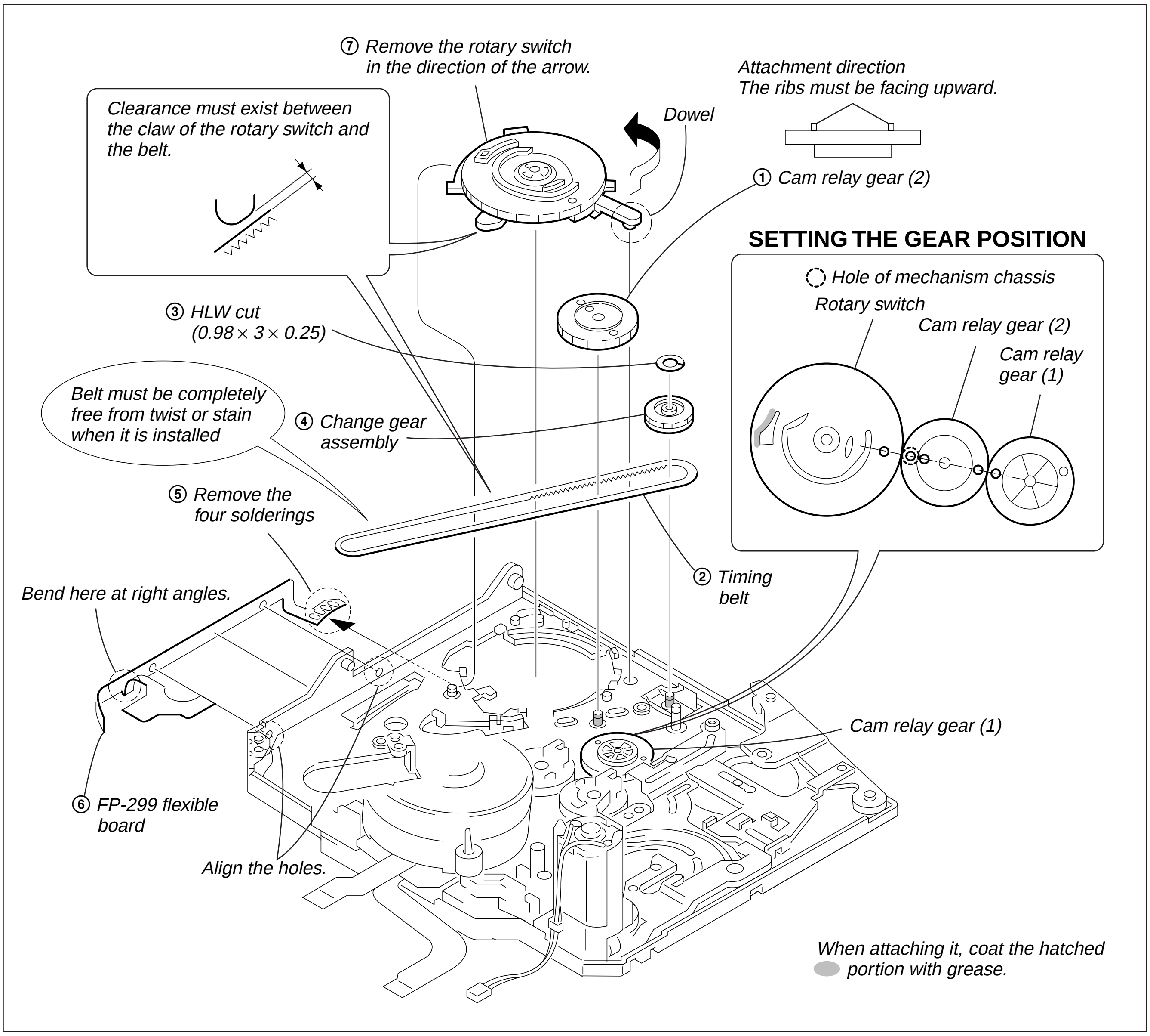

⑦ Remove the rotary switch in the direction of the arrow.
Attachment direction
The ribs must be facing upward.
Clearance must exist between the claw of the rotary switch and the belt.
Dowel
① Cam relay gear (2)
SETTING THE GEAR POSITION
Hole of mechanism chassis
Rotary switch
Cam relay gear (2)
Cam relay gear (1)
③ HLW cut (0.98 × 3 × 0.25)
Belt must be completely free from twist or stain when it is installed
④ Change gear assembly
⑤ Remove the four solderings
② Timing belt
Bend here at right angles.
Cam relay gear (1)
⑥ FP-299 flexible board
Align the holes.
When attaching it, coat the hatched portion with grease.

Fig. 4-16.

4-17. Guide Gear Assembly, Guide Gear T Assembly, Cam Relay Gear 1, Guide Lock Plate (S)

1. Removal procedure

1) Remove the LS chassis block assembly. (Refer to 4-10.)
2) Remove the screw (camera pan2 main M1.4 × 1.6) ①.
3) Remove the guide lock plate (S) ② in the direction of the arrow Ⓐ.
4) Remove the two stop rings (E type 1.2) ③.
5) Remove the guide gear (S) assembly ④ and guide gear (T) assembly ⑤.
6) Remove the HLW cut (0.98 × 3 × 0.25) ⑥.
7) Remove the cam relay gear (1) ⑦.

2. Attachment procedure

1) Attach the cam relay gear (1) ⑦ with the HLW cut (0.98 × 3 × 0.25) ⑥.

   Note: The in-phase markings of the cam relay gear (1) ⑦, cam gear (2) and cam relay gear must be aligned.
2) Attach the guide gear (T) assembly ⑤ and guide gear (S) assembly ④ to the shaft in this order and adjust the positions. Then, attach them with the two stop rings (E type 1.2) ③.

   Note1: The in-phase markings of the GL arm assembly, guide gear (S) ④ and guide gear (T) ⑤ must be aligned.

   Note2: The guide gear assembly (S/T) has a different shape respectively. Pay attention to the shapes.
3) Fit the guide lock plate (S) ② in the groove on the shaft and insert the portion Ⓑ into the notch. Then, attach the plate with the screw (camera pan2 main M1.4 × 1.6) ①.
   Tightening torque: 0.078 ± 0.01 N•m (0.8 ± 0.1 kgf•cm)
4) Attach the LS chassis block assembly to the mechanical chassis. (Refer to 4-10.)

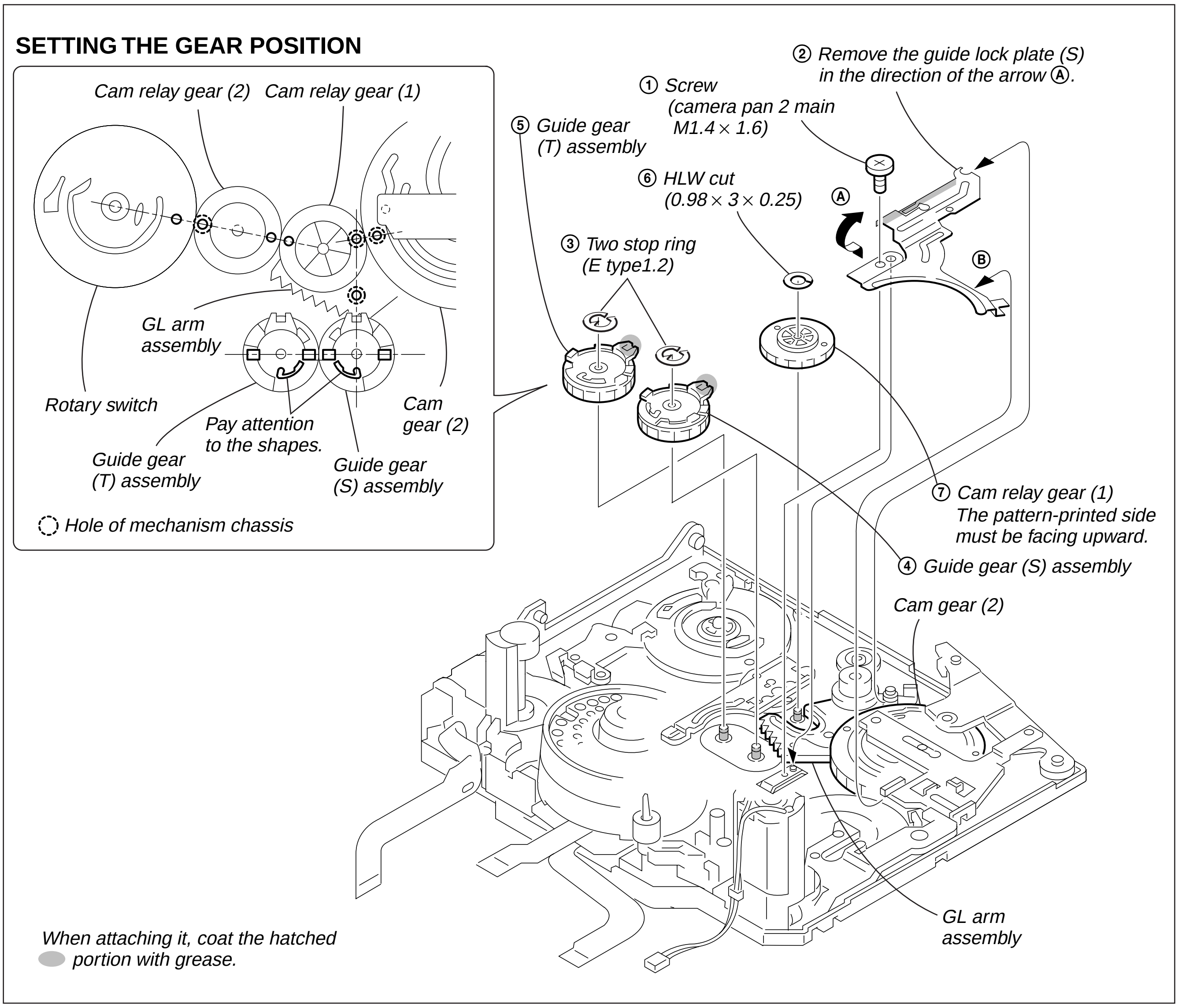

SETTING THE GEAR POSITION
Cam relay gear (2)
Cam relay gear (1)
GL arm assembly
Rotary switch
Pay attention to the shapes.
Cam gear (2)
Guide gear (T) assembly
Guide gear (S) assembly
Hole of mechanism chassis
② Remove the guide lock plate (S) in the direction of the arrow Ⓐ.
① Screw (camera pan 2 main M1.4 × 1.6)
⑤ Guide gear (T) assembly
⑥ HLW cut (0.98 × 3 × 0.25)
Ⓐ
Ⓑ
③ Two stop ring (E type1.2)
⑦ Cam relay gear (1) The pattern-printed side must be facing upward.
④ Guide gear (S) assembly
Cam gear (2)
GL arm assembly
When attaching it, coat the hatched portion with grease.

Fig. 4-17.

4-18. LD Gear 4, Cam Gear 1, HC Drive Arm

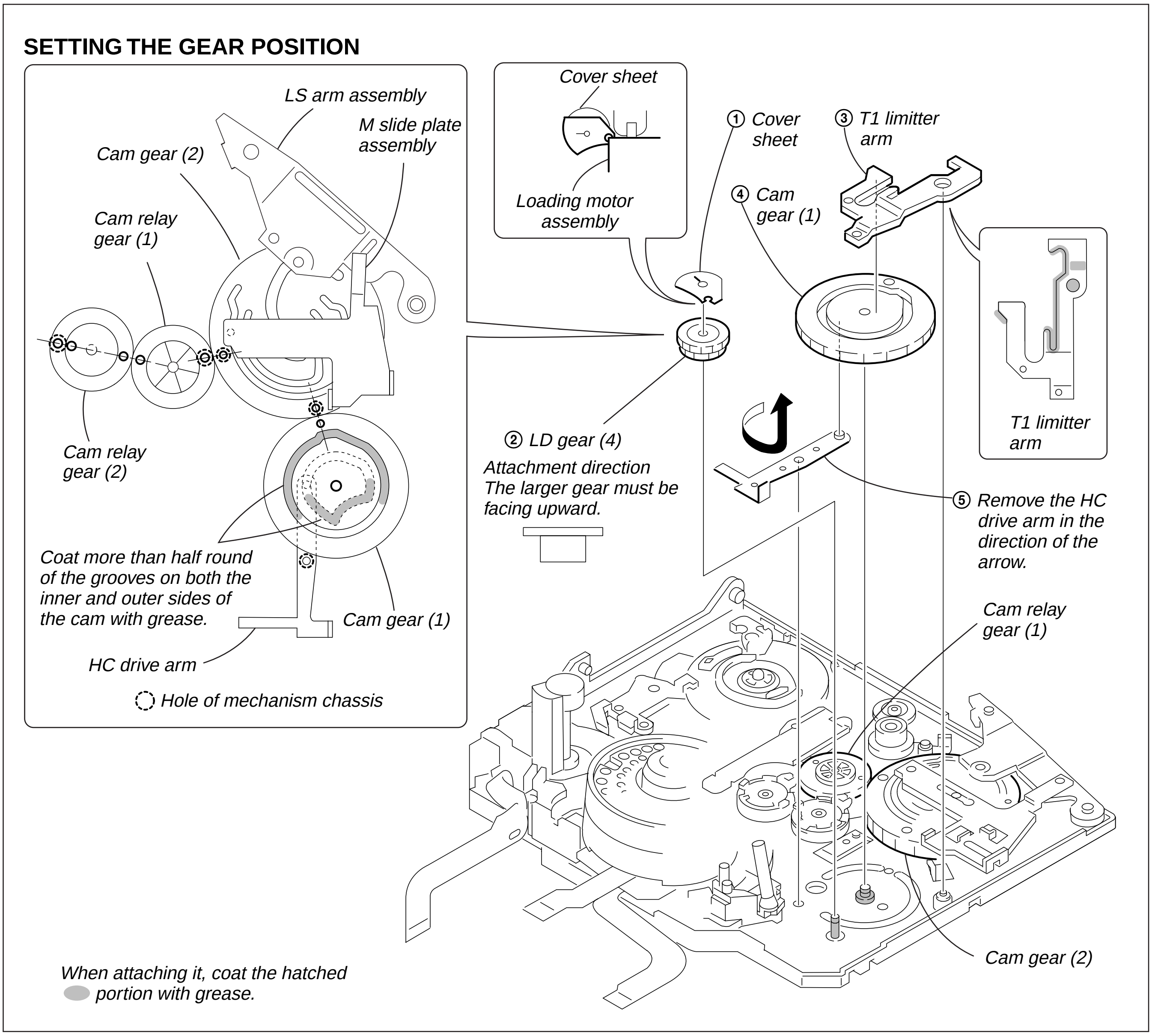
Remove in advance the HCL arm assembly and loading motor assembly beforehand. (Refer to 4-2.)

1. Removal procedure

1) Remove the LS chassis block assembly. (Refer to 4-10.)
2) Remove the guide lock plate (S). (Refer to 4-17.)
3) Remove the cover sheet ① and LD gear (4) ②.
4) Remove the T1 limiter arm ③ and cam gear (1) ④.
5) Remove the HC drive arm ⑤ in the direction of the arrow.

2. Attachment procedure

1) Attach the HC drive arm ⑤ under the drive base assembly.
2) Attach the cam gear (1) ④.
   The dowel of the HC drive arm ⑤ must be inserted into the groove on the lower side of the cam gear (1) ④.
   The in-phase markings of the cam gear (1) ④, cam gear (2) and cam relay gear (1) must be aligned.
3) Attach the LD gear (4) ② with the cover sheet ①.
4) Attach the guide plate (S).
5) Attach the LS chassis block assembly to the mechanical chassis. (Refer to 4-10.)
6) Clean the tape running path. (Refer to 2-2.)


SETTING THE GEAR POSITION
LS arm assembly
M slide plate assembly
Cam gear (2)
Cam relay gear (1)
Cam relay gear (2)
Cam gear (1)
HC drive arm
Hole of mechanism chassis
Cover sheet
Loading motor assembly
① Cover sheet
③ T1 limitter arm
④ Cam gear (1)
T1 limitter arm
② LD gear (4)
⑤
Cam relay gear (1)
Cam gear (2)

Coat more than half round of the grooves on both the inner and outer sides of the cam with grease.

Attachment direction
The larger gear must be facing upward.

⑤ Remove the HC drive arm in the direction of the arrow.

When attaching it, coat the hatched ⬮ portion with grease.

Fig. 4-18.

4-19. M Slide Plate Assembly, LS Arm Assembly, Cam Gear 2, GL Arm Assembly

1. Removal procedure

1) Remove the LS chassis block assembly. (Refer to 4-10.)
2) Remove the guide lock plate (S) (Refer to 4-17.)
3) Remove the relay gear ①.
4) Remove the M slide plate assembly ② in the direction of the arrow Ⓐ.
5) Remove the LS arm assembly ③ and LS arm roller ④.
6) Remove the cam gear (2) ⑤.
7) Remove the GL arm assembly ⑥ from the lower side of the cam relay gear (1) in the direction of the arrow Ⓑ.

   Note: After removing the GL arm assembly, fix the guide gear (S/T) assembly.

2. Attachment procedure

1) Attach the GL arm assembly ⑥ to the shaft so that the GL arm assembly ⑥ is positioned under the cam relay gear (1) .

   Note: The in-phase markings of the guide gear (S/T) assembly and GL arm assembly ⑥ must be aligned.
2) While aligning the cam gear (2) ⑤ with the dowel of the GL arm assembly, attach the cam gear (2) ⑤.

   Note: The in-phase markings of the cam relay gear (1), cam gear (1) and cam gear (2) ⑤ must be aligned.
3) Attach the LS arm roller ④ to the LS arm assembly ③. While aligning them with the cam groove on the cam gear (2) ⑤, attach them.
4) Attach the M slide plate assembly ②.
5) Attach the relay gear ①.
6) Attach the guide lock plate (S). (Refer to 4-17.)
7) Attach the LS chassis block assembly to the mechaical chassis. (Refer to 4-10.)

Note: Check that the in-phase marking of each gear is aligned.

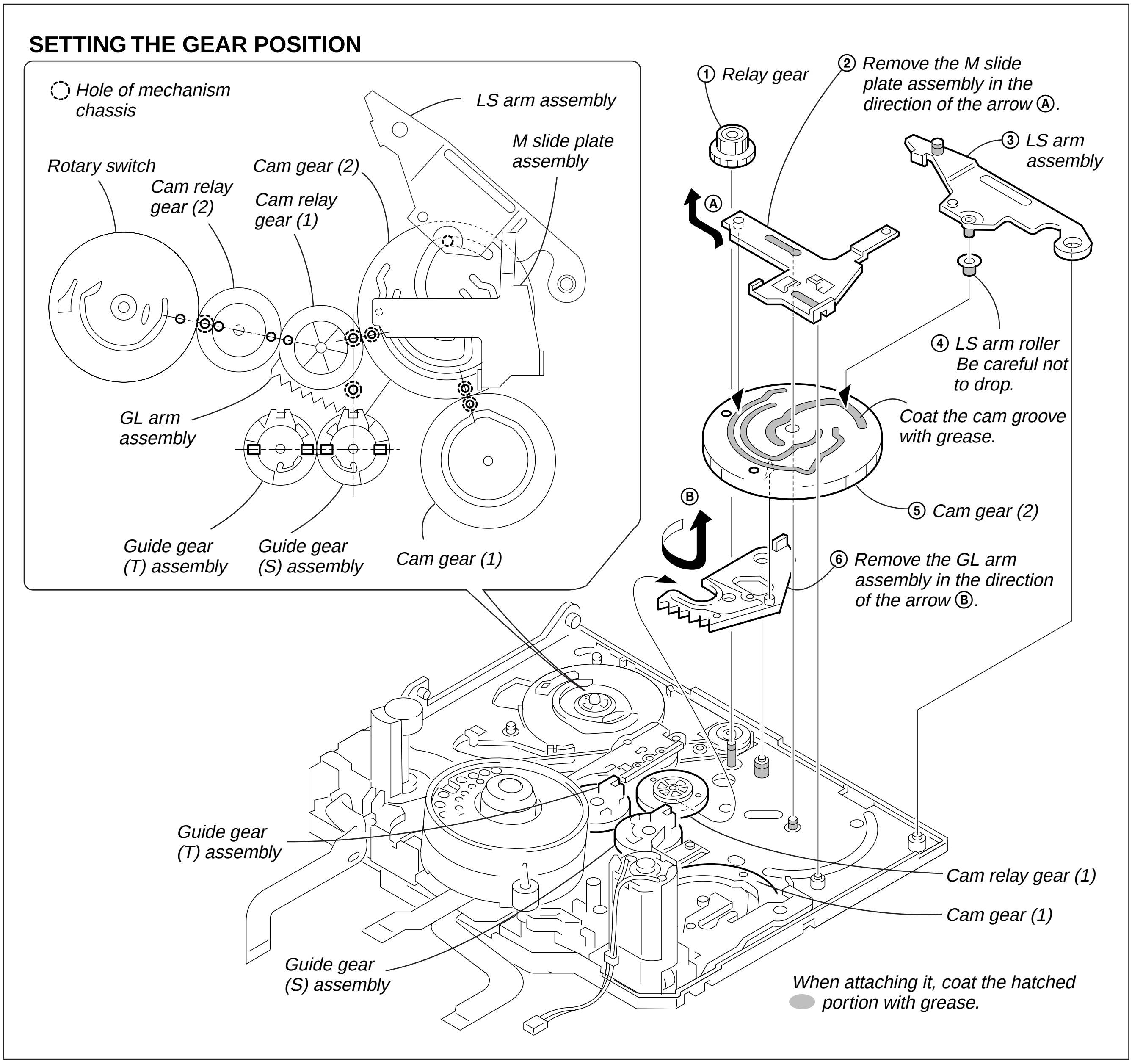

SETTING THE GEAR POSITION
◌ Hole of mechanism chassis
Rotary switch
Cam relay gear (2)
Cam gear (2)
Cam relay gear (1)
LS arm assembly
M slide plate assembly
GL arm assembly
Guide gear (T) assembly
Guide gear (S) assembly
Cam gear (1)
① Relay gear
② Remove the M slide plate assembly in the direction of the arrow Ⓐ.
③ LS arm assembly
Ⓐ
④ LS arm roller Be careful not to drop.
Coat the cam groove with grease.
Ⓑ
⑤ Cam gear (2)
⑥ Remove the GL arm assembly in the direction of the arrow Ⓑ.
Guide gear (T) assembly
Cam relay gear (1)
Cam gear (1)
Guide gear (S) assembly
When attaching it, coat the hatched portion with grease.

Fig. 4-19.

5. Adjustment

5-1. Check and Adjustment of TG1 Back-tension Position

1. Check Procedure

1) Assemble the mechanism deck into the main unit.
2) Thread a normal tape and let the machine enter the PB (or REC) mode.
3) Check that the distance between the upper flange of the TG1 guide and the side surface of the LS chassis block is 12.0 ± 0.4 mm (range of fluctuation: 0.5 mm or less).

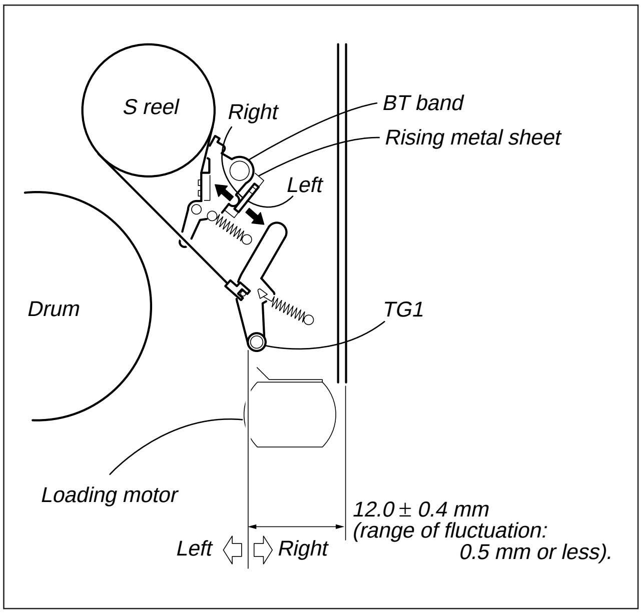

S reel
Right
BT band
Rising metal sheet
Left
Drum
TG1
Loading motor
12.0 ± 0.4 mm
(range of fluctuation:
0.5 mm or less).
Left
Right

Fig. 5-1.

2. Adjustment Procedure

1) Remove the cassette compartment and the blind plate.
2) Adjust the position of the TG1 guide by changing the tilt of the rising metal sheet of the LS chassis block assembly.

5-2. Check and Adjustment of FWD/RVS Back-tension

1. Check Procedure

1) Install the mechanism deck in the main unit and set the take-up torque cassette (Ref. No. J-7).
2) Check the FWD/RVS take-up torque.
   Check the FWD torque in the PLAY state.
   Specified value: 7 to 12 gf•cm
   Check the RVS torque in the RVS state.
   Specified value: 19.5 to 29.5 gf•cm

2. Adjustment Procedure

1) If the value of the FWD torque is larger than the specifications, change the position where the TG1 arm spring is hooked in the direction of the arrow Ⓐ. If the value of the FWD torque is smaller than the specifications, change the position in the direction of the arrow Ⓑ.

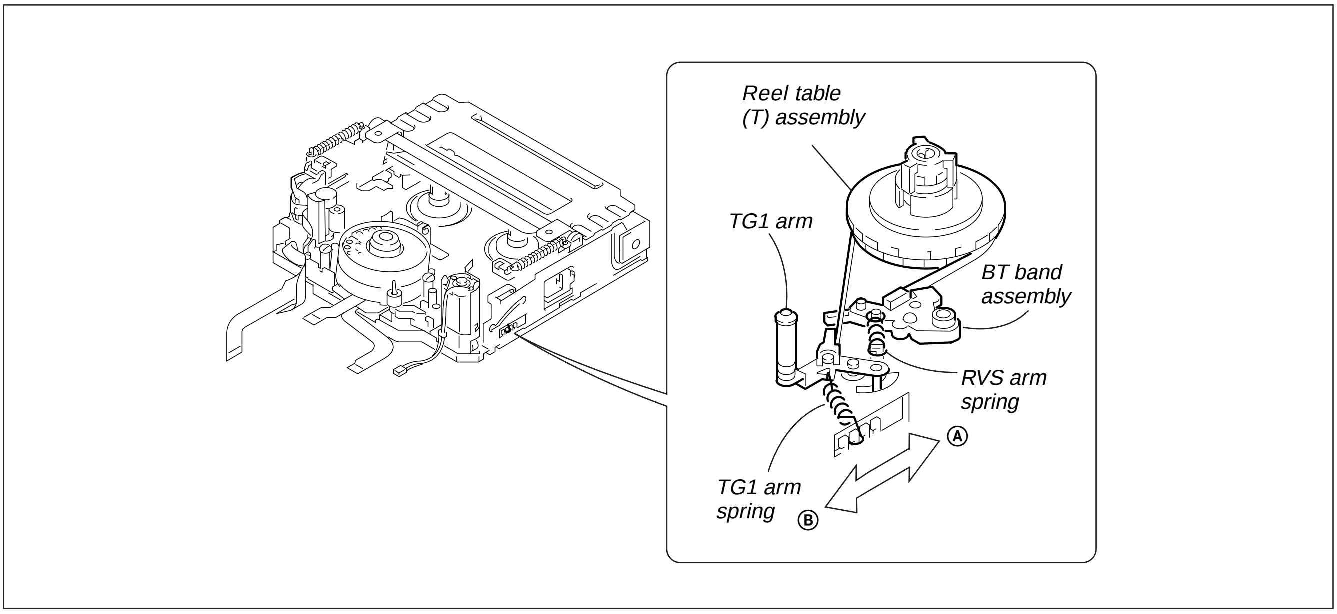

Reel table
(T) assembly
TG1 arm
BT band
assembly
RVS arm
spring
Ⓐ
TG1 arm
spring
Ⓑ

Fig. 5-2.

5-3. Capstan Motor Azimuth Position Adjustment

1. Check Procedure

1) Insert the thickness gauge (Ref. No. J-16) of 0.75 mm between the protrusion of the mechanism chassis and the capstan motor, and check the azimuth position.

2. Adjustment Procedure

1) Loosen the capstan azimuth adjustment screw (SANG camera pan 2 M1.4 × 4.5), and insert the thickness gauge (0.75 mm)(Ref. No. J-16) between the protrusion of the mechanism chassis and the capstan motor.
2) Slowly tighten the capstan azimuth adjustment screw until it slightly contacts the thickness gauge, and remove the thickness gauge.

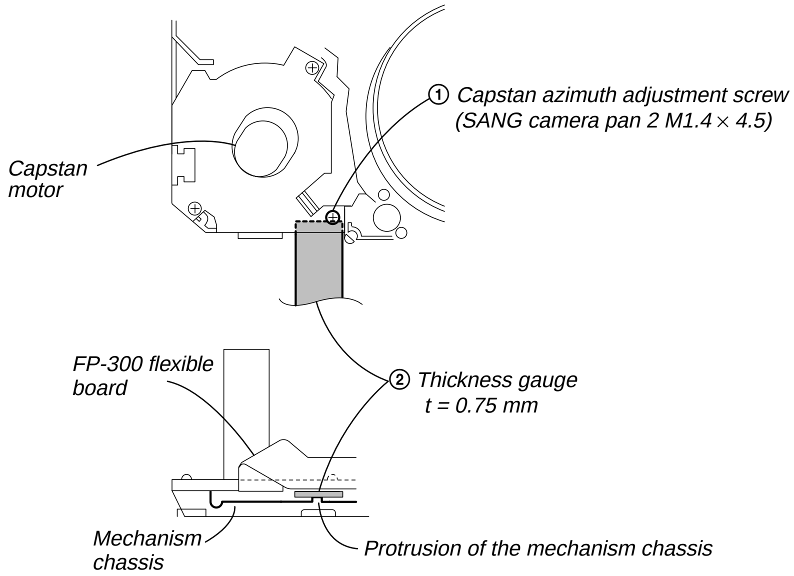

① Capstan azimuth adjustment screw
(SANG camera pan 2 M1.4 × 4.5)
Capstan motor
FP-300 flexible board
② Thickness gauge
t = 0.75 mm
Mechanism chassis
Protrusion of the mechanism chassis

Fig. 5-3.

5-4. Tape Path Adjustment

Purpose: Adjust the linearity of the head.

If the adjustment is not correct:

Noise appears on the top and bottom of the screen when playing back the tape that is recorded by other recorders.

5-4-1. Adjustment Preparation

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller).
2) Connect the adjustment remote commander to the remote terminal.
3) Set the adjustment remote commander to the PATH mode (track shift mode)* and release the auto tracking.
4) Connect an oscilloscope as follows:
   CH1: Test connector' PB RF terminal
   External trigger: Test connector' RF SWP terminal
5) Playback the tracking alignment tape WR5-1NP (NTSC), WR5-1CP (PAL) (Ref. No. J-6).
6) Confirm that the RF waveform on scope is flat both at entrance side and exit side.
   If the RF waveform is not flat, perform the adjustment by referring to section 4-2.)
7) After the adjustment is completed, release the PATH mode (track shift mode)*.

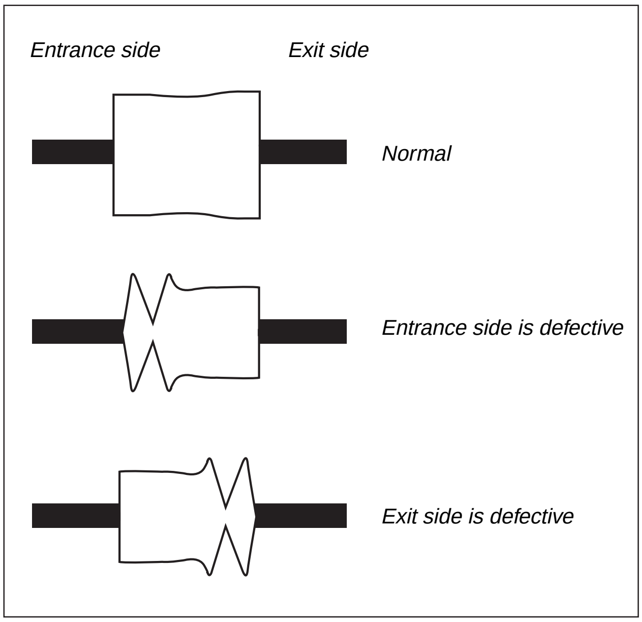


Fig. 5-4.

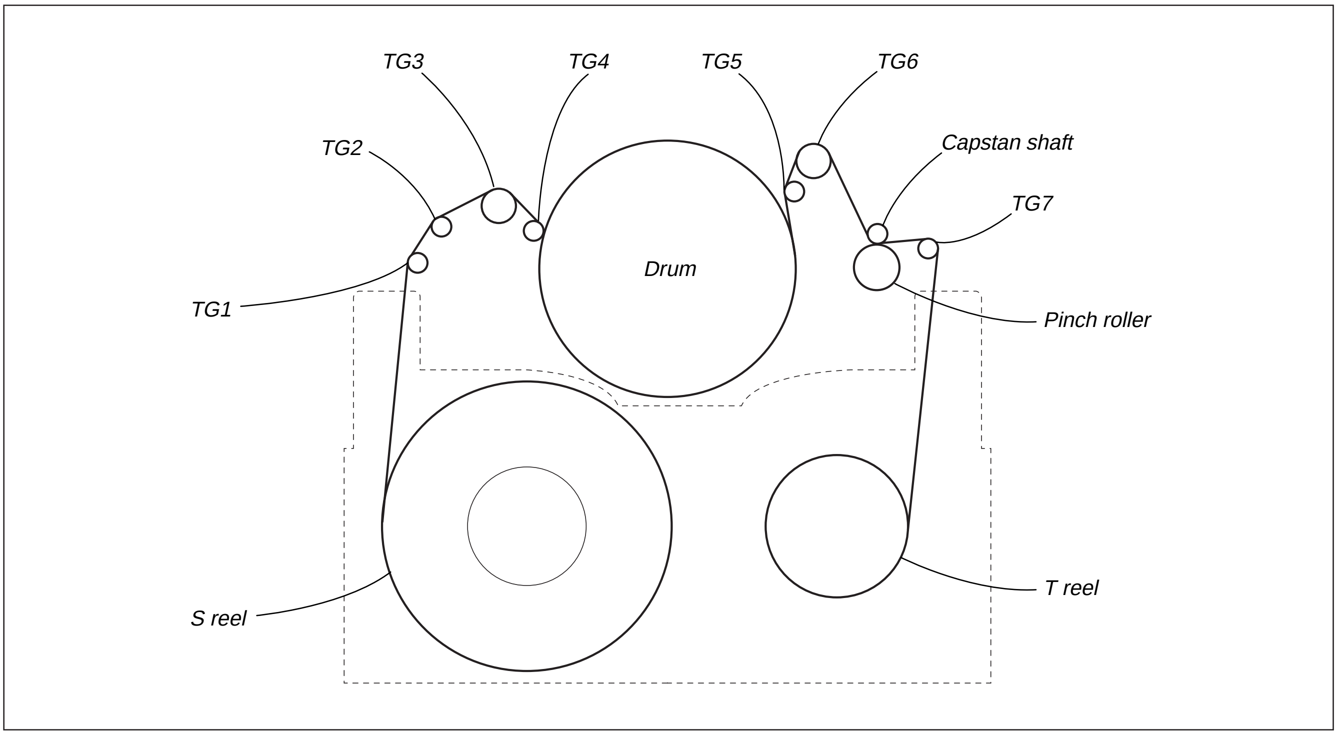


Fig. 5-5.

* **Setting and releasing the track shift mode**

In case of the DCR-TRV230

Setting

1. Select page: 0, address: 01 and set data: 01.
2. Select page: F, address: 22 and set data: 88, and press the PAUSE button.
3. Select page: 2, address: 2E and set data: 02. (Note)

Releasing

1. Select page: 0, address: 01 and set data: 01.
2. Select page: F, address: 22 and set data: 80, and press the PAUSE button.
3. Select page: 2, address: 2E and set data: 00.
4. Select page: 0, address: 01 and set data: 00. (Note)

Note: In case of the Digital8 only, set the data of page: 2, address: 2E.

5-4-2. Tracking Adjustment (Refer to Fig. 5-6.)

1) Playback the tracking alignment tape WR5-1NP (NTSC), WR5-1CP (PAL) (Ref. No. J-6).
2) Adjust the No.3 guide until the envelope at the entrance side waveform becomes flat.
3) Adjust the No.6 guide until the envelope at the exit side waveform becomes flat.

☆ The TG-3/6 zenith adjustment screws do not need to be adjusted.

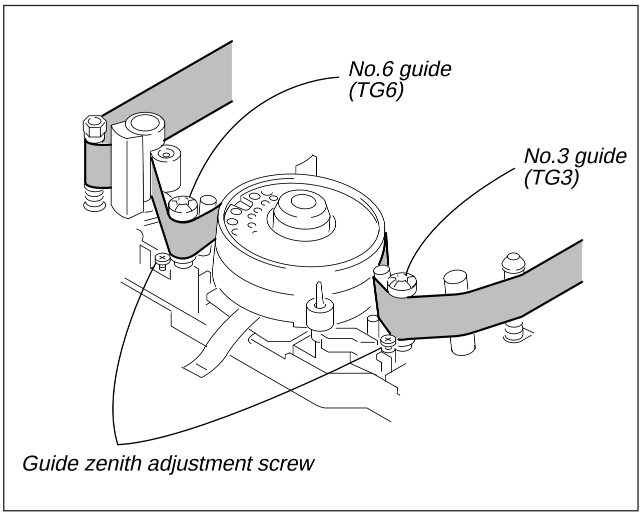

No.6 guide
(TG6)
No.3 guide
(TG3)
Guide zenith adjustment screw

Fig. 5-6.

5-4-3. No.7 Guide (TG7) Adjustment (Refer to Fig. 5-7.)

1) Playback the tape and set the REV mode.
2) Confirm that tape slack does not occur in between the No.6 guide (TG6) ① and capstan ②. If any tape slack occurs, rotate the TG7 nut ④ of the No.7 guide (TG7) ③ to remove the tape slack.
3) Playback the tape again and confirm that tape slack does not occur between the capstan ② and No.7 guide (TG7) ③. If the tape slack occurs exceeding the specifications (specifications: 0.5 mm or less), rotate the TG7 nut ④ to make the tape slack below the specifications (0.5 mm). When the tape slack between the No.6 guide (TG6) ① and capstan ② is 0.3 mm or less in the REV mode, it means that the adjustment is completed.

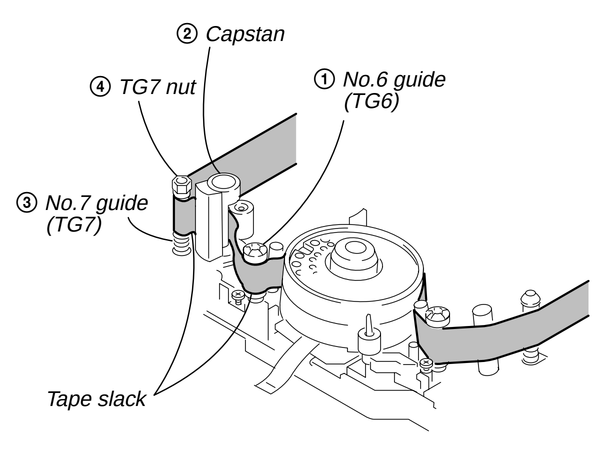

② Capstan
④ TG7 nut
① No.6 guide
(TG6)
③ No.7 guide
(TG7)
Tape slack

Fig. 5-7.

5-4-4. CUE and REV Waveform Check (Refer to Fig. 5-8)

1) Playback the tracking alignment tape WR5-1NP (NTSC), WR5-1CP (PAL)(Ref. No. J-6) and enter the REV mode.
   Confirm on an oscilloscope that the pitches between the peaks of the RF waveform are equally spaced for 5 seconds or more.
   If pitches between peaks of the RF waveform are not equal, perform sections “5-4-2 Tracking Adjustment” and “5-4-3 No. 7 Guide (TG7) Adjustment”.
2) Enter the UCE mode. Confirm on an oscilloscope that the pitches between the peaks of the RF waveform are equally spaced for 5 seconds or more.
   If pitches between peaks of the RF waveform are not equal, perform section “5-4-2 Tracking Adjustment”.

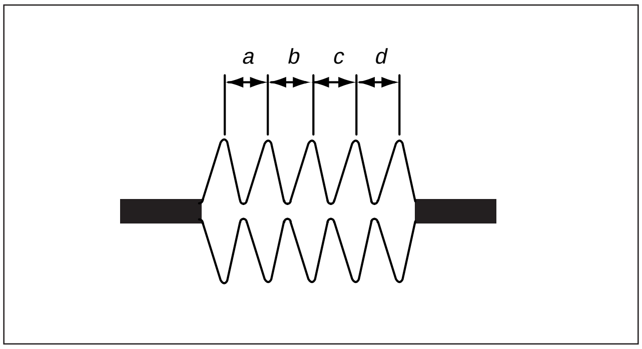


Fig. 5-8.

5-4-5. Check upon Completion of Adjustment

5-4-5-1. Tracking Check

1) Playback the tracking alignment tape in the PATH mode. Compare the amplitude of the RF waveform in the AUTO tracking mode and with that in the PATH mode. Confirm that the amplitude of the RF waveform decreases to about 3/4 when the tracking alignment tape is switched from the AUTO tracking mode to the PATH mode. (Refer to Fig. 5-9)
2) During step 1, confirm that the minimum amplitude (E_{MIN}) is 65% or more of the maximum amplitude (E_{MAX}) of the RF waveform. (Refer to Fig. 5-10)
3) Confirm that the RF waveform does not fluctuate too excessively.(Refer to Fig. 5-11)

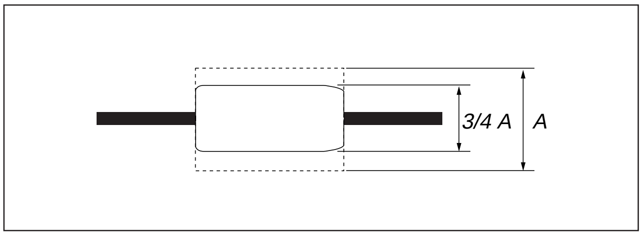
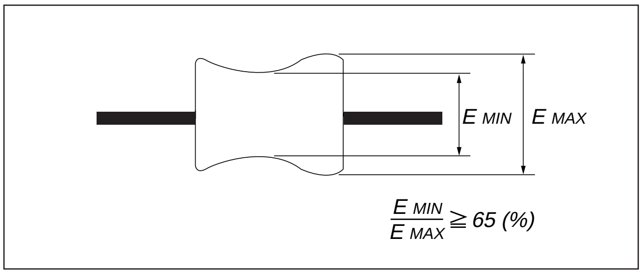
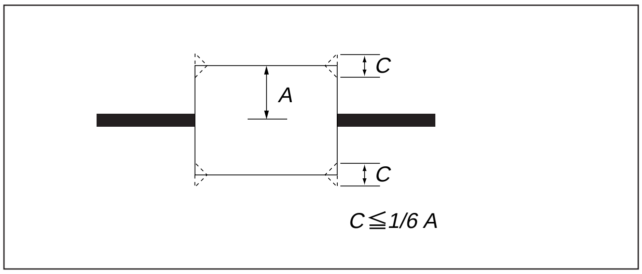


Fig. 5-9.



$\frac{E_{MIN}}{E_{MAX}} \geqq 65\ (\%)$

Fig. 5-10.



$C \leqq 1/6\ A$

Fig. 5-11.

5-4-5-2. Rise-up Check (Refer to Fig. 5-12)

1) Playback the tracking alignment tape WR5-1NP (NTSC), WR5-1CP (PAL)(Ref. No. J-6).
2) Turn OFF the Track Shift mode.
3) Eject the cassette tape once. Then insert the cassette tape for loading again.
4) Confirm that the RF waveform rises up to the flat envelope within 3 seconds after the machine enters the PLAY mode. Check also that the tape slack does not occur at around the pinch roller.
5) Run the tape in the CUE/REV and the FF/REW mode. Then playback the tracking alignment tape and confirm the RF waveform rises up to the flat envelope within 3 seconds after the machine enters the PLAY mode. Check also that the tape slack does not occur at around the pinch roller.
6) Repeat the above steps 3) to 5) once again for re-check.

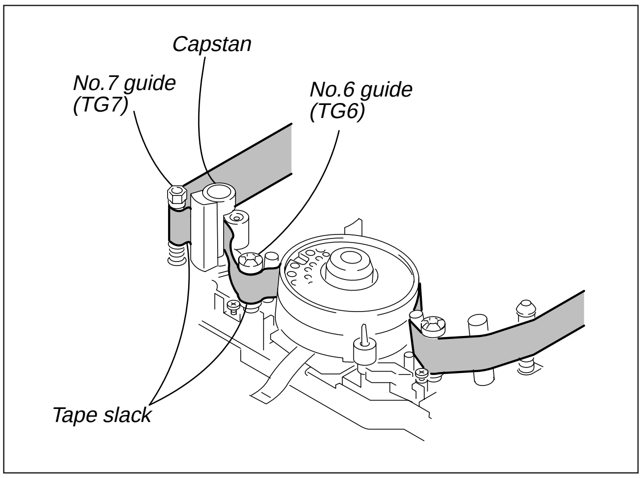


Fig. 5-12.

5-4-5-3. Tape Run Check (Refer to Fig. 5-13)

1) Playback the thin video tape such as P6-120MP (NTSC), P6-90MP (PAL). Confirm that tape does not float and the major tape curl of more than 0.3 mm does not occur at the top flange of the No. 3 guide (TG3), at the top flange of the No. 6 guide (TG6) and at both the top and bottom flanges of the No. 7 guide (TG7).
2) Confirm that tape does not float and the major tape curl of more than 0.3 mm does not occur at the flanges of the respective guide when the FF button is pressed during PLAY mode to enter the CUE mode and when the REW button is pressed during PLAY mode to enter the REV mode.

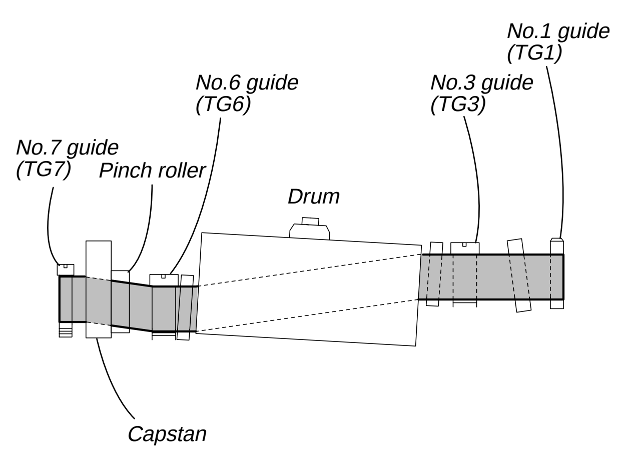
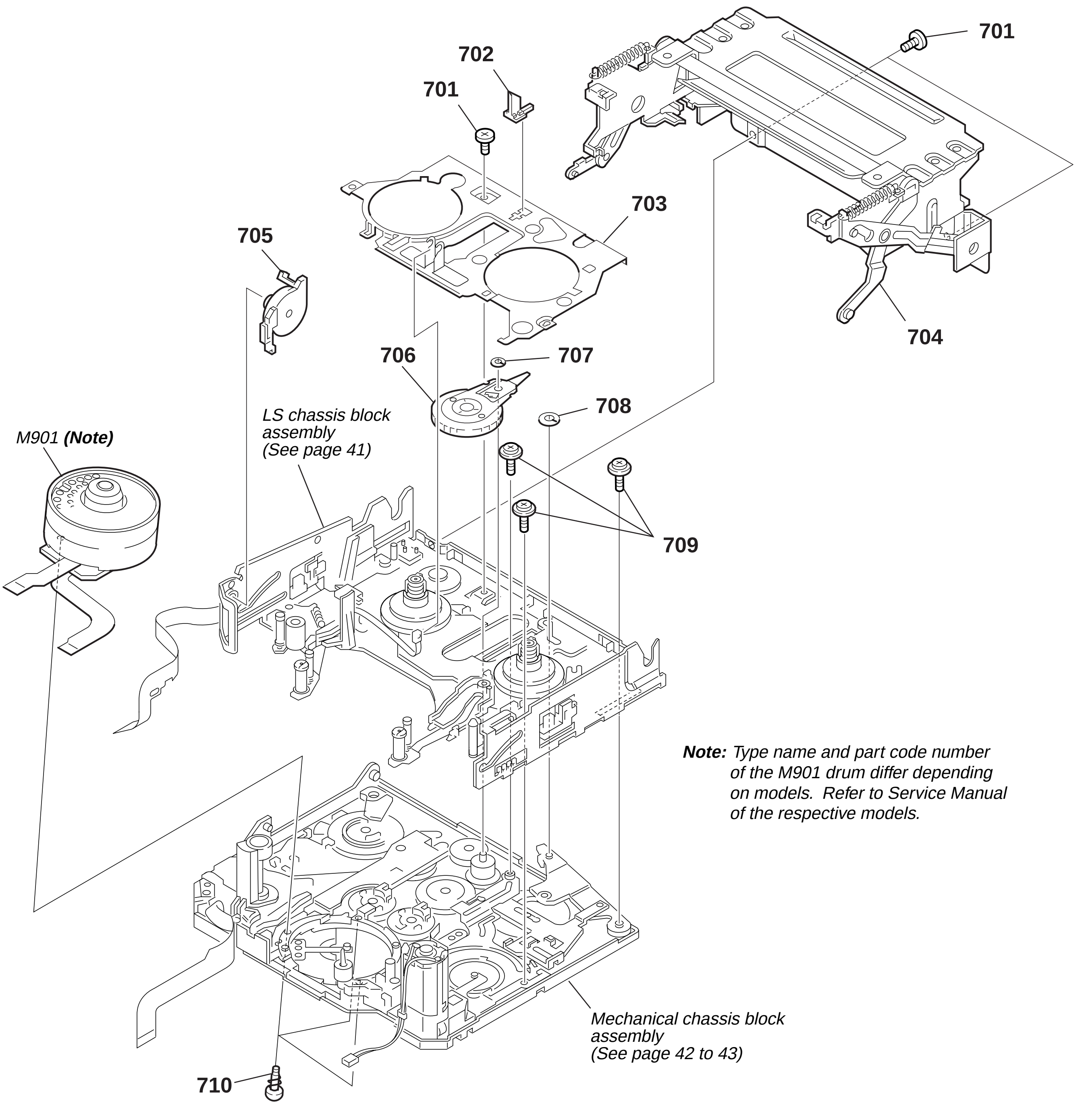


Fig. 5-13.

6. Exploded Views

6-1. Cassette Compartment Assy, Drum Assy

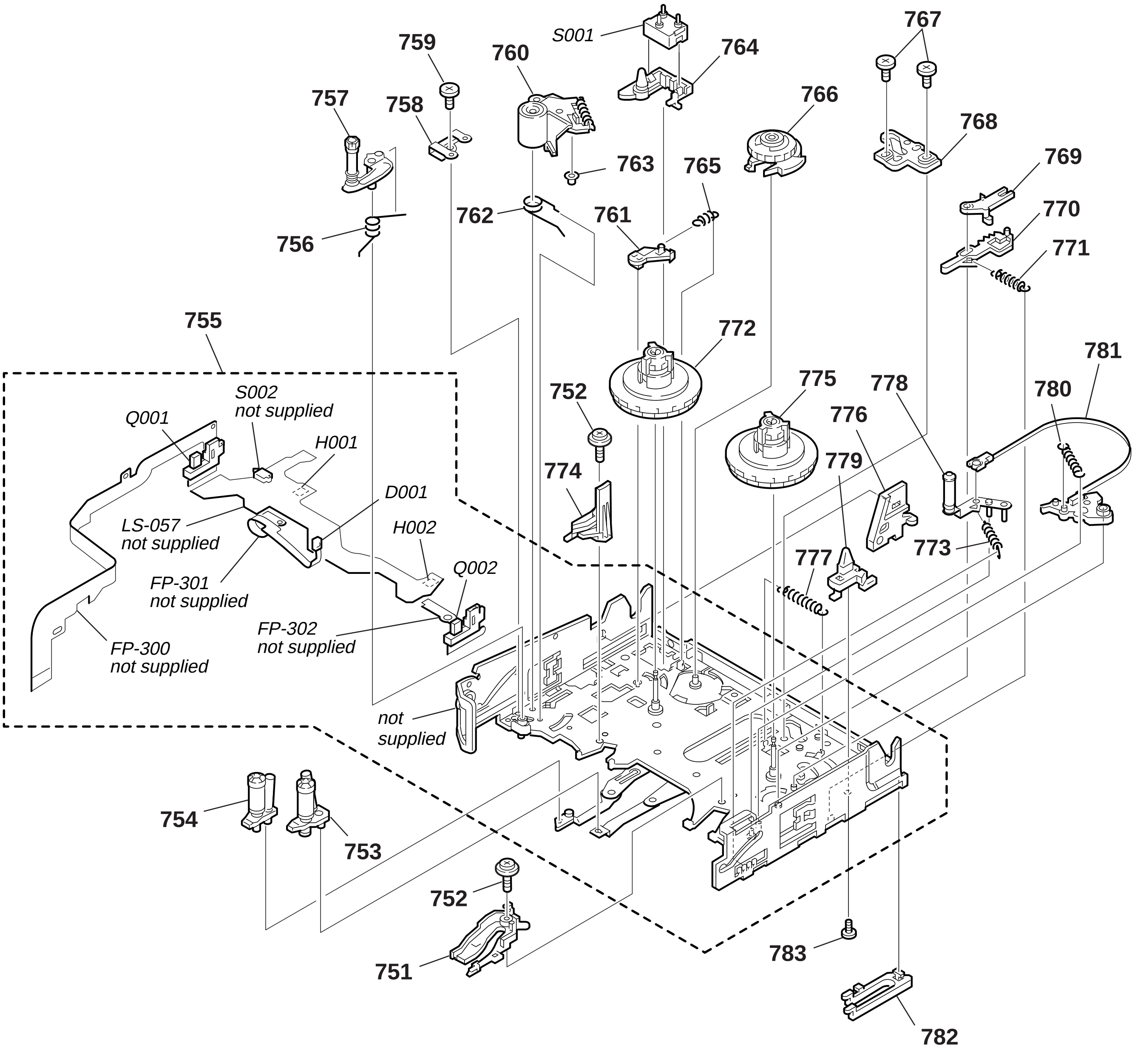

701
702
701
703
705
704
706
707
708
M901 **(Note)**
LS chassis block assembly (See page 41)
709
Mechanical chassis block assembly (See page 42 to 43)
710

Note: *Type name and part code number of the M901 drum differ depending on models. Refer to Service Manual of the respective models.*

Ref. No.	Part No.	Description	Remarks
701	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA	
702	3-065-895-01	LEVER, REEL RELEASE	
703	3-065-896-01	PLATE, BLIND	
704	X-3951-298-1	CASSETTE COMPARTMENT ASSY	
705	X-3951-302-1	DAMPER ASSY	
706	X-3951-297-1	GEAR ASSY, R DRIVE	

Ref. No.	Part No.	Description	Remarks
707	3-065-840-01	CUT (0.98X3X0.13), LUMILER (W)	
708	3-065-935-01	HLC CUT (1.8X4X0.5)	
709	3-947-503-01	SCREW (M1.4)	
710	X-3951-299-1	SCREW ASSY, DRUM FITTING	
M901	— Note —	DRUM	

6-2. LS Chassis Block Assembly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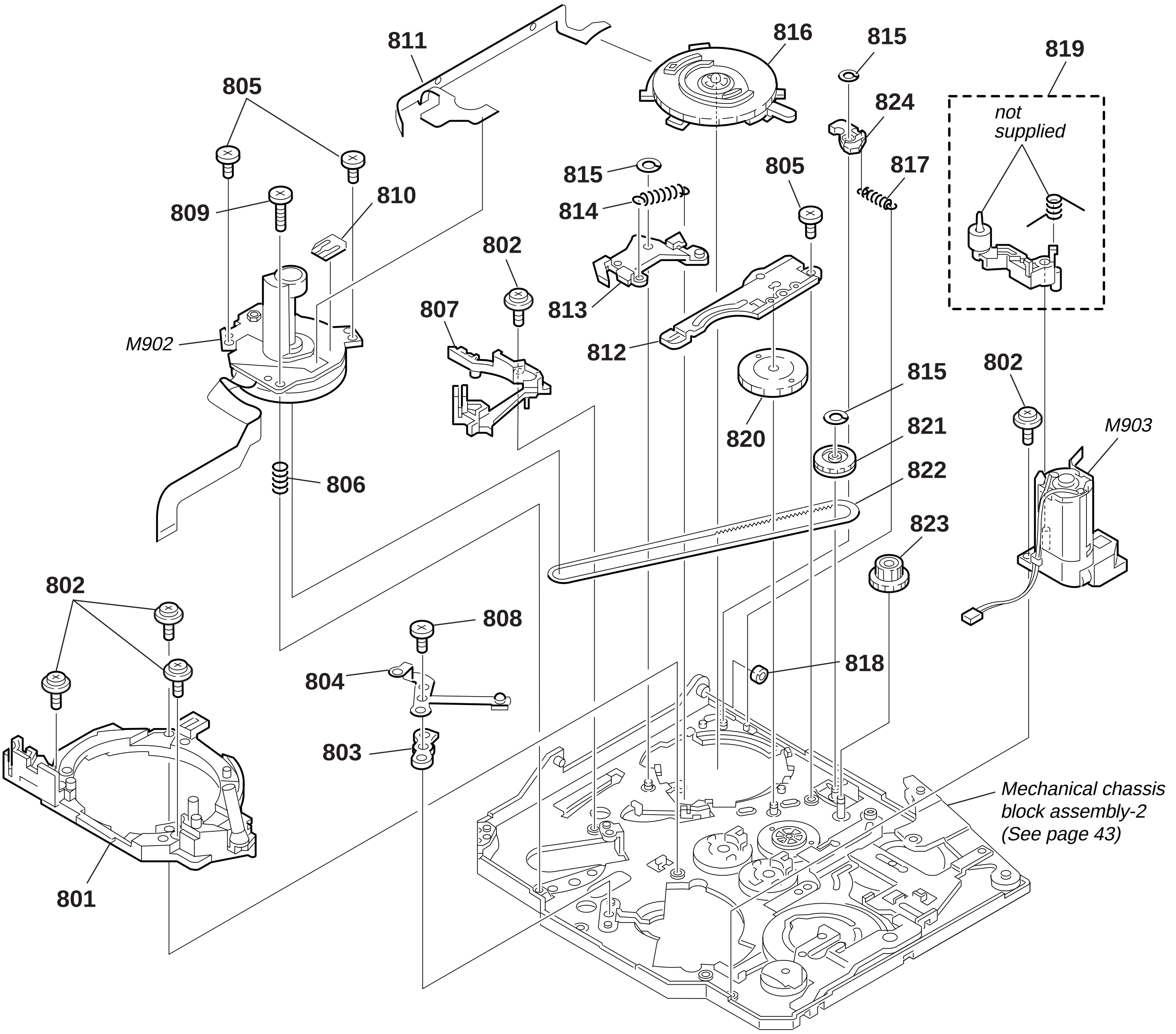
759
S001
760
764
757
758
766
768
769
763
765
762
761
770
756
771
755
772
781
752
775
778
780
S002
not supplied
Q001
776
H001
774
779
D001
LS-057
not supplied
H002
773
777
Q002
FP-301
not supplied
FP-302
not supplied
FP-300
not supplied
not
supplied
754
753
752
751
783
782

Ref. No.	Part No.	Description	Remarks
751	3-065-822-01	RAIL (S), GUIDE	
752	3-947-503-01	SCREW (M1.4)	
753	A-7096-416-A	BASE (S) BLOCK ASSY, GUIDE	
754	A-7096-415-A	BASE (T) BLOCK ASSY, GUIDE	
755	A-7096-426-A	CHASSIS ASSY, LS	
756	3-065-802-01	SPRING, TG7 ARM	
757	A-7096-414-A	ARM BLOCK ASSY, TG7	
758	3-065-801-01	RETAINER, TG7	
759	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA	
760	X-3951-303-1	ARM ASSY, PINCH	
761	3-065-823-01	ARM, T RATCHET	
762	3-065-794-01	ROAD (SPR), PINCH ARM	
763	3-065-792-01	ROLLER, P LIM ARM	
764	3-065-834-01	GUIDE (T), CASSETTE	
765	3-065-824-01	SPRING, T RATCHET	
766	A-7096-417-A	SOFT ASSY, T	
767	7-627-852-38	SCREW,PRECISION +P1.7X1.8 TYPE3	
768	3-065-832-01	PLATE, LS CAM	
769	3-065-828-01	ARM, S RATCHET	
770	3-065-829-01	PLATE, S RATCHET (RE)	
771	3-065-830-01	SPRING, S RATCHET	
772	X-3951-288-1	TABLE (T) ASSY, REEL	
773	3-065-819-01	SPRING, TG1 ARM	
774	3-065-821-01	RAIL (T), GUIDE	
775	X-3951-289-1	TABLE (S) ASSY, REEL	
776	3-065-833-01	GUIDE, LOCK	
777	3-065-831-01	PLATE (SPR), RE RETURN	
778	X-3951-304-1	ARM ASSY, TG1	
779	3-065-835-01	GUIDE (S), CASSETTE	
780	3-065-820-01	SPRING, RVS ARM	
781	X-3951-296-1	BAND (ASSY), BT	
782	3-065-836-01	COVER, LS GREASE	
783	3-067-167-01	SCREW (M1.4X2), CAMERA TAPPING	
D001	8-719-988-42	DIODE GL453 (TAPE LED)	
H001	8-719-033-37	ELEMENT, HALL HW-105C (T REEL)	
H002	8-719-033-37	ELEMENT, HALL HW-105C (S REEL)	
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE TOP)	
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE END)	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (REC PROOF)	

6-3. Mechanical Chassis Block Assembly-1


811
816
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805
824
not supplied
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802
807
813
M902
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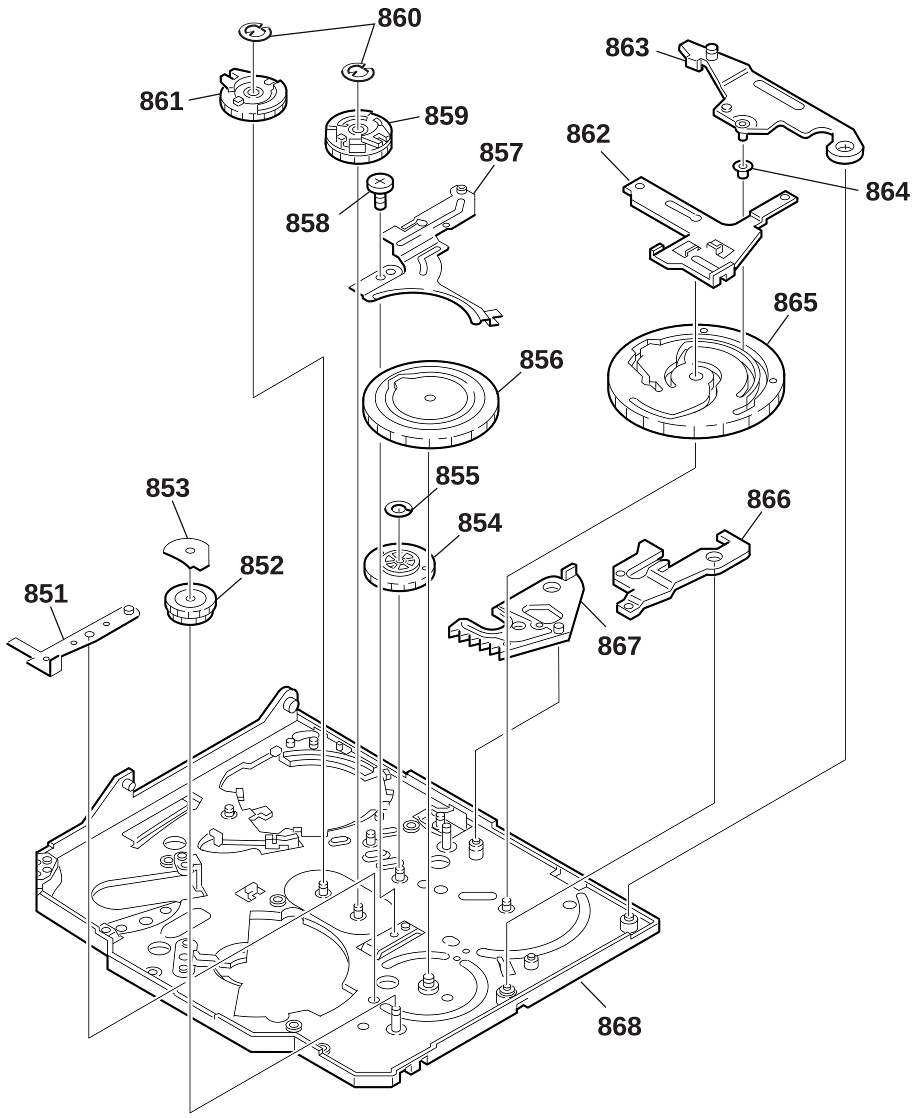
802
821
M903
820
806
822
823
802
808
818
804
803
Mechanical chassis block assembly-2 (See page 43)
801

Ref. No.	Part No.	Description	Remarks
801	A-7096-422-A	BASE ASSY, DRUM	
802	3-947-503-01	SCREW (M1.4)	
803	3-065-928-01	SPACER, GROUND	
804	3-065-927-01	GROUND, DRUM	
805	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA	
806	3-067-154-01	SPRING, CAPSTAN	
807	3-065-931-01	RAIL (T2), GUIDE	
808	X-3947-398-1	SCREW ASSY, M1.7 PW	
809	3-065-933-01	PAN (2 MAIN 1.4X4.5), CAMERA	
810	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)	
811	1-680-434-11	FP-299 FLEXIBLE BOARD	
812	3-065-877-01	PLATE (T), GUIDE LOCK	
813	X-3951-301-1	PLATE ASSY, PINCH PRESSURE	
814	3-065-881-01	SPRING, P PRESSURE PLATE	
815	3-065-934-01	HLW CUT 0.98X3X0.25	
816	1-786-096-11	SWITCH, ROTARY	
817	3-065-898-01	SPRING, EJECT ARM	
818	3-065-870-01	ROLLER, LS GUIDE	
819	A-7096-421-A	ARM ASSY, HCL	
820	3-065-918-01	GEAR (2), CAM RELAY	
821	A-7096-419-A	GEAR ASSY, CHANGE	
822	3-065-902-01	BELT, TIMING	
823	3-065-905-01	GEAR, RELAY	
824	3-065-882-01	ARM, EJECT	
M902	8-835-701-01	MOTOR, DC SCE13A/C-NP (CAPSTAN)	
M903	A-7096-420-A	MOTOR ASSY, LD (LOADING)	

6-4. Mechanical Chassis Block Assembly-2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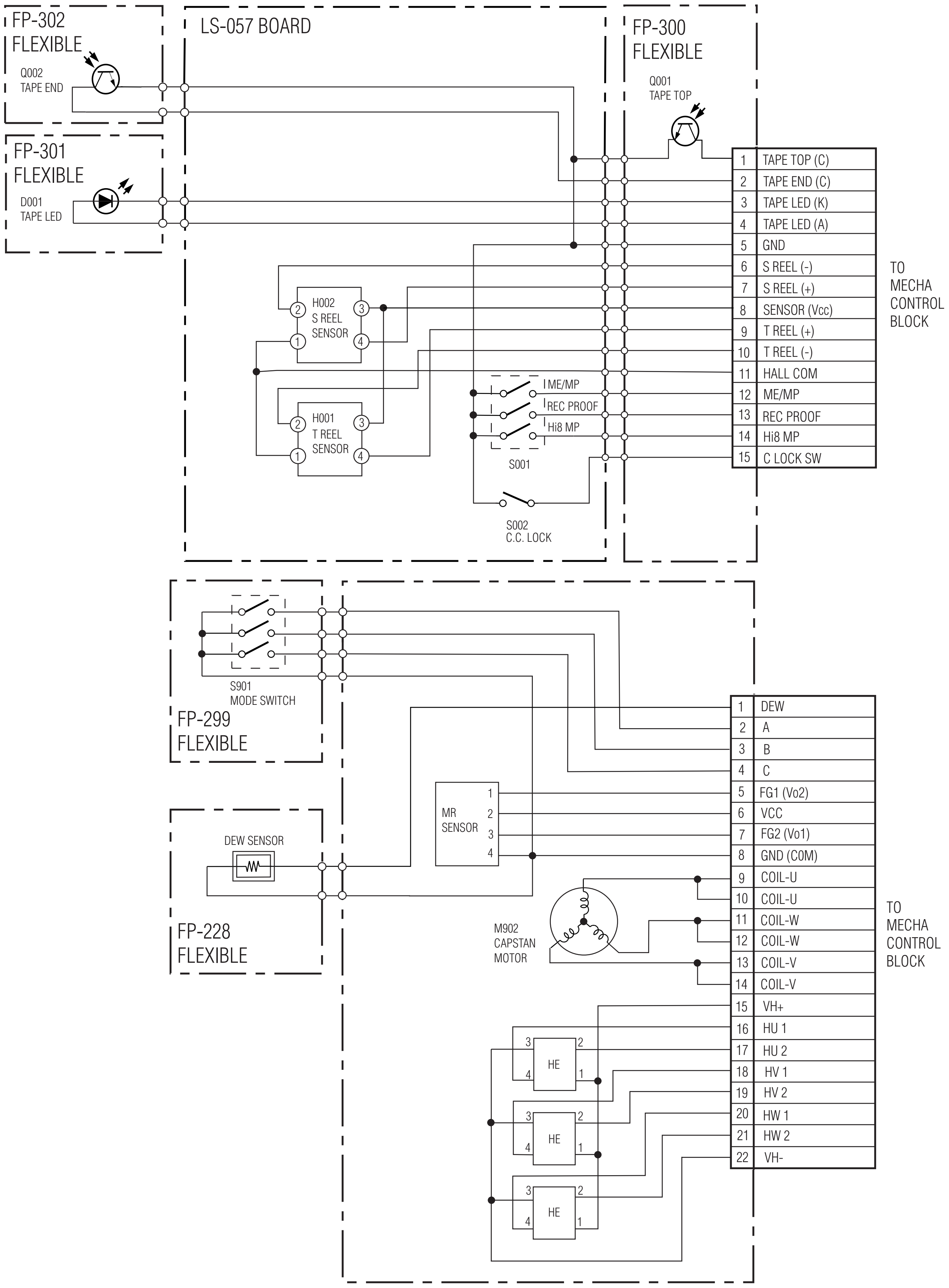
Ref. No.	Part No.	Description	Remarks
851	3-065-920-01	ARM, HC DRIVE	
852	3-065-913-01	GEAR (4), LD	
853	3-065-914-01	SHEET, COVER	
854	3-065-917-01	GEAR (1), CAM RELAY	
855	3-065-934-01	HLW CUT 0.98X3X0.25	
856	3-065-915-01	GEAR (1), CAM	
857	3-065-878-01	PLATE (S), GUIDE LOCK	
858	3-065-932-01	PAN (2 MAIN M1.4X1.6), CAMERA	
859	A-7096-413-A	GEAR (S) ASSY, GUIDE	
860	7-624-101-04	STOP RING 1.2 (E TYPE)	
861	A-7096-412-A	GEAR (T) ASSY, GUIDE	
862	X-3951-307-1	PLATE ASSY, M SLIDE	
863	X-3951-305-1	ARM ASSY, LS	
864	3-065-901-01	ROLLER, LS ARM	
865	3-065-916-01	GEAR (2), CAM	
866	3-065-919-01	ARM, T1 LIMITTER	
867	X-3951-308-1	ARM ASSY, GL	
868	X-3951-300-1	CHASSIS ASSY, MECHANICAL	

7. Printed Wiring Boards and Schematic Diagrams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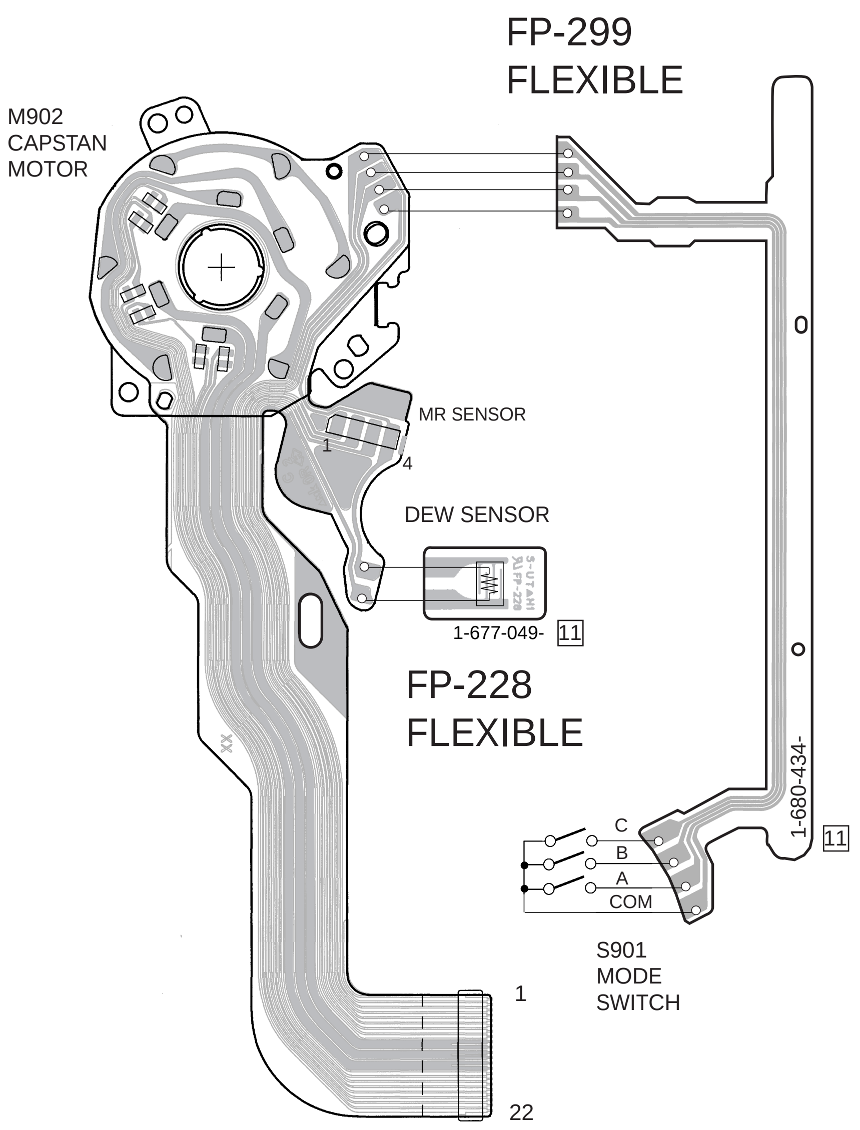
Q002 TAPE END
FP-301 FLEXIBLE
D001 TAPE LED
LS-057 BOARD
FP-300 FLEXIBLE
Q001 TAPE TOP
H002 S REEL SENSOR
H001 T REEL SENSOR
ME/MP
REC PROOF
Hi8 MP
S001
S002 C.C. LOCK
1 TAPE TOP (C)
2 TAPE END (C)
3 TAPE LED (K)
4 TAPE LED (A)
5 GND
6 S REEL (-)
7 S REEL (+)
8 SENSOR (Vcc)
9 T REEL (+)
10 T REEL (-)
11 HALL COM
12 ME/MP
13 REC PROOF
14 Hi8 MP
15 C LOCK SW
TO MECHA CONTROL BLOCK
S901 MODE SWITCH
FP-299 FLEXIBLE
DEW SENSOR
FP-228 FLEXIBLE
MR SENSOR
M902 CAPSTAN MOTOR
HE
HE
HE
1 DEW
2 A
3 B
4 C
5 FG1 (Vo2)
6 VCC
7 FG2 (Vo1)
8 GND (COM)
9 COIL-U
10 COIL-U
11 COIL-W
12 COIL-W
13 COIL-V
14 COIL-V
15 VH+
16 HU 1
17 HU 2
18 HV 1
19 HV 2
20 HW 1
21 HW 2
22 VH-
TO MECHA CONTROL BLOCK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M902
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MOTOR
MR SENSOR
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DEW SENSOR
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C
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A
COM
S901
MODE
SWITCH
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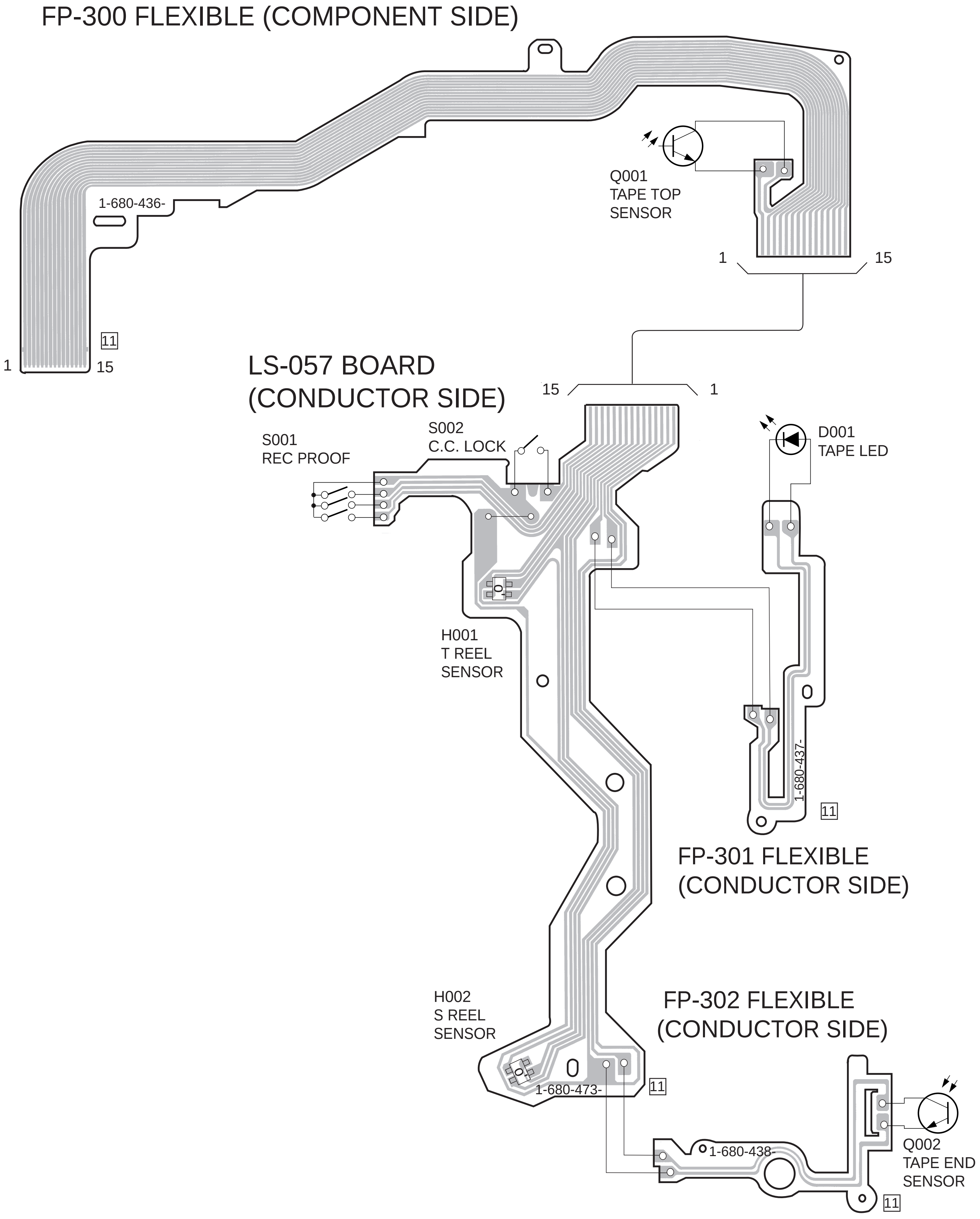
FP-300 FLEXIBLE (COMPONENT SIDE)
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1
15
Q001
TAPE TOP
SENSOR
1
15
LS-057 BOARD
(CONDUCTOR SIDE)
15
1
S001
REC PROOF
S002
C.C. LOCK
D001
TAPE LED
H001
T REEL
SENSOR
1-680-437-
11
FP-301 FLEXIBLE
(CONDUCTOR SIDE)
H002
S REEL
SENSOR
FP-302 FLEXIBLE
(CONDUCTOR SIDE)
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11
1-680-438-
Q002
TAPE END
SENSOR
11

9-929-861-11

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Personal VIDEO Products Company

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